NOVEMBER 15, 1920
VOL. XX NO. 3

BUYERS INDEX PG 262

THE COMMERCIAL CAR JOURNAL

Entered as Second-Class Matter at the Post Office at Philadelphia, Pa.

PUBLISHED THE 15TH OF EACH MONTH
CHILTON COMPANY
MARKET & 49TH STS. PHILADELPHIA

QUALITY

CLARK AXLES

For Motor Trucks

Quality is relation to inherent goodness—the approximation of an ideal—a high standard used to determine comparative values. Clark axles establish a standard of quality in motor truck axle construction.

CLARK EQUIPMENT COMPANY
Buchanan, Michigan

Also makers of Clark Steel Disc Wheels for Motor Trucks

Are You "Following Through" the Sale?

THE days of order taking are past; the manufacturer is no longer merely filling orders—now he has to create orders.

Changing conditions have made the dealers throughout the land send forth the S.O.S.

Loading up the dealer with more wares than he really wanted was all well and good in its day, but it won't produce the results desired today, unless you "follow through" and help him unload. If the manufacturer wants to make a real sales drive he should "follow through."

Sell the dealer; but don't over-sell him. If you load his shelves and his warehouse, help unload them. Production costs, in some instances, are slightly lower; but sales costs, in all cases, are higher.

Is it better to try to force matters by over-selling, or by selling over? Selling over means that after you sell your product to the dealer you should sell it over again by helping him move your product.

"Follow through."

It is necessary, these days.

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Entered as second-class matter at the Post Office at Philadelphia, Pa., under the act of March 3, 1879

Vol. XX PHILADELPHIA, NOVEMBER 15, 1920 No. 3

Published the 15th of each month by the

CHILTON COMPANY

Market and 49th Streets Philadelphia, U.S.A.

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TABLE OF CONTENTS

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United States and Possessions	$2.00
Canada	3.00
Foreign	4.00
Single Copies	40c

Make Checks, Money Orders, etc., payable to Chilton Company

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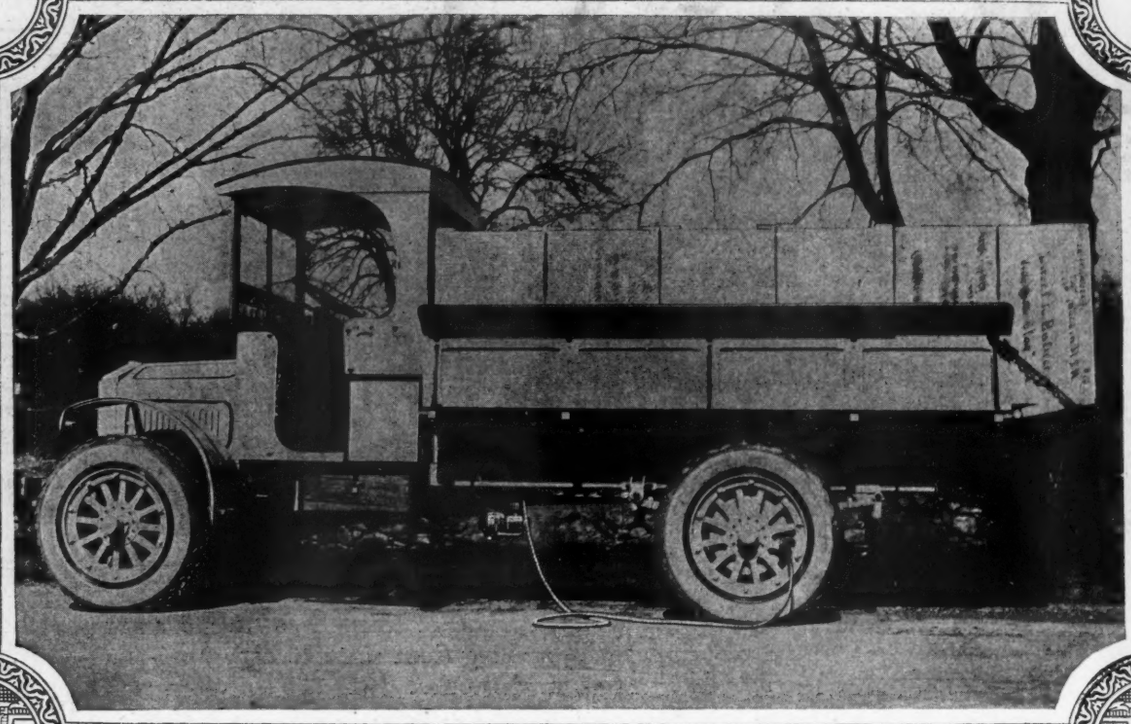


No Motor Truck or Motor Car is completely equipped that is not equipped with a Kellogg Engine-Driven Tire Pump

Make Sure Your Motor Truck or Car Is Equipped With a KELLOGG Engine-Driven TIRE PUMP

PRICE reductions of motor trucks and cars may, in some cases, necessitate curtailment of standard equipment.

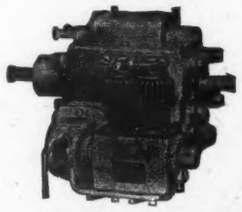
See that your motor truck or car comes completely equipped—with a KELLOGG Engine-Driven TIRE PUMP.

Without KELLOGG Engine-Driven TIRE PUMPS it would not be possible to operate motor trucks equipped with pneumatic tires. And they are a necessity on motor cars today.

Practically all of the leading motor trucks and motor cars manufactured today are equipped with KELLOGG Engine-Driven TIRE PUMPS as standard equipment.

A KELLOGG PUMP on a truck or car is an indication of superiority of construction and material.

CAUTION
Make sure your Motor Truck or Motor Car is equipped with a KELLOGG Engine-Driven TIRE PUMP



KELLOGG MANUFACTURING CO., ROCHESTER, N. Y., U. S. A.

KELLOGG TIRE PUMPS

Knowledge is the Basis of Confidence

Our Book, "Molybdenum Commercial Steels," a 72-page volume of specific data obtained in the commercial use of many thousands of tons, will be sent on request.

The time is not far distant when the use of Molybdenum Steel will be accepted by all buyers as conclusive proof of extra quality and serviceability in an automobile or motor truck.

Developing this confidence is simply a matter of acquainting the general market with the distinctive superiorities of Molybdenum Steel for automotive duty—and that is the purpose of the Climax national advertising campaign which is now in progress.

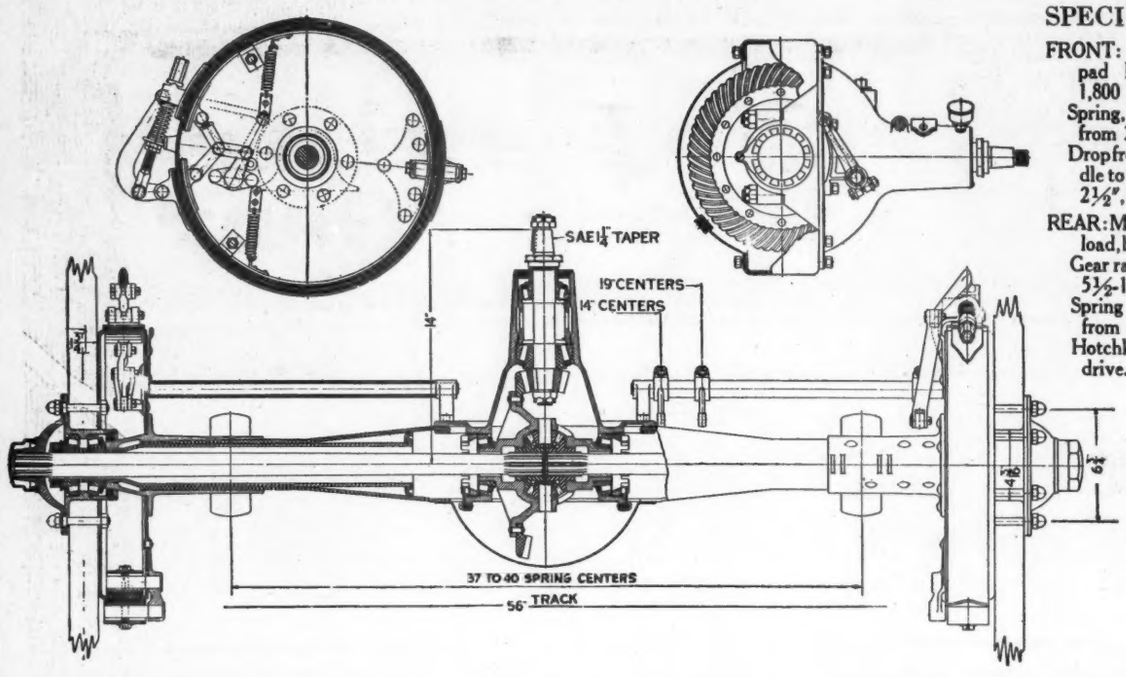
The page here reproduced is the second in a series which will be addressed to motordom throughout the coming year.

Climax Molybdenum Co. associated with **The American Metal Co., Ltd.**

61 Broadway
New York

CLIMAX Mo-lyb-den-um The Commercial Alloy

Climax Molybdenum Company is the largest producer of Molybdenum in the world.



SPECIFICATIONS

FRONT: Maximum spring pad load, both pads 1,800 lbs.
Spring, center distance, from 26½" to 29".
Drop from center line spindle to top of spring pad: 2½", 3½", 4½".

REAR: Maximum spring pad load, both pads 3,000 lbs.
Gear ratios available: 5-1, 5½-1, 6-1, 6½-1, 7-1.
Spring center distance from 37" to 41".
Hotchkiss or torque arm drive.

Bevel-Gear Truck Axles
to Withstand High Speed Strain

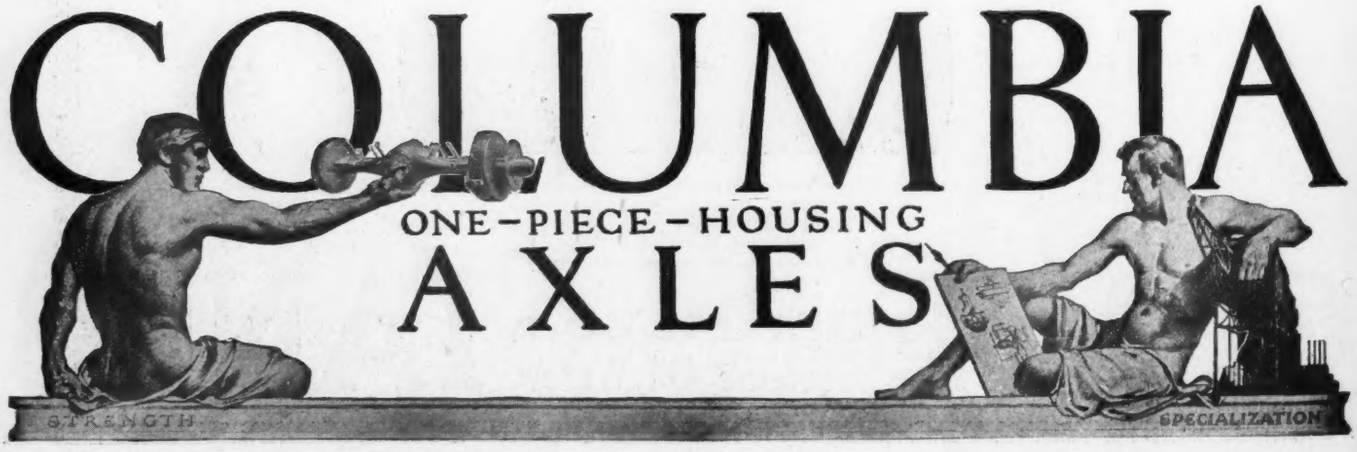
THE Columbia Special Axles for one-ton high-speed delivery trucks are built to withstand the roughest kind of treatment.

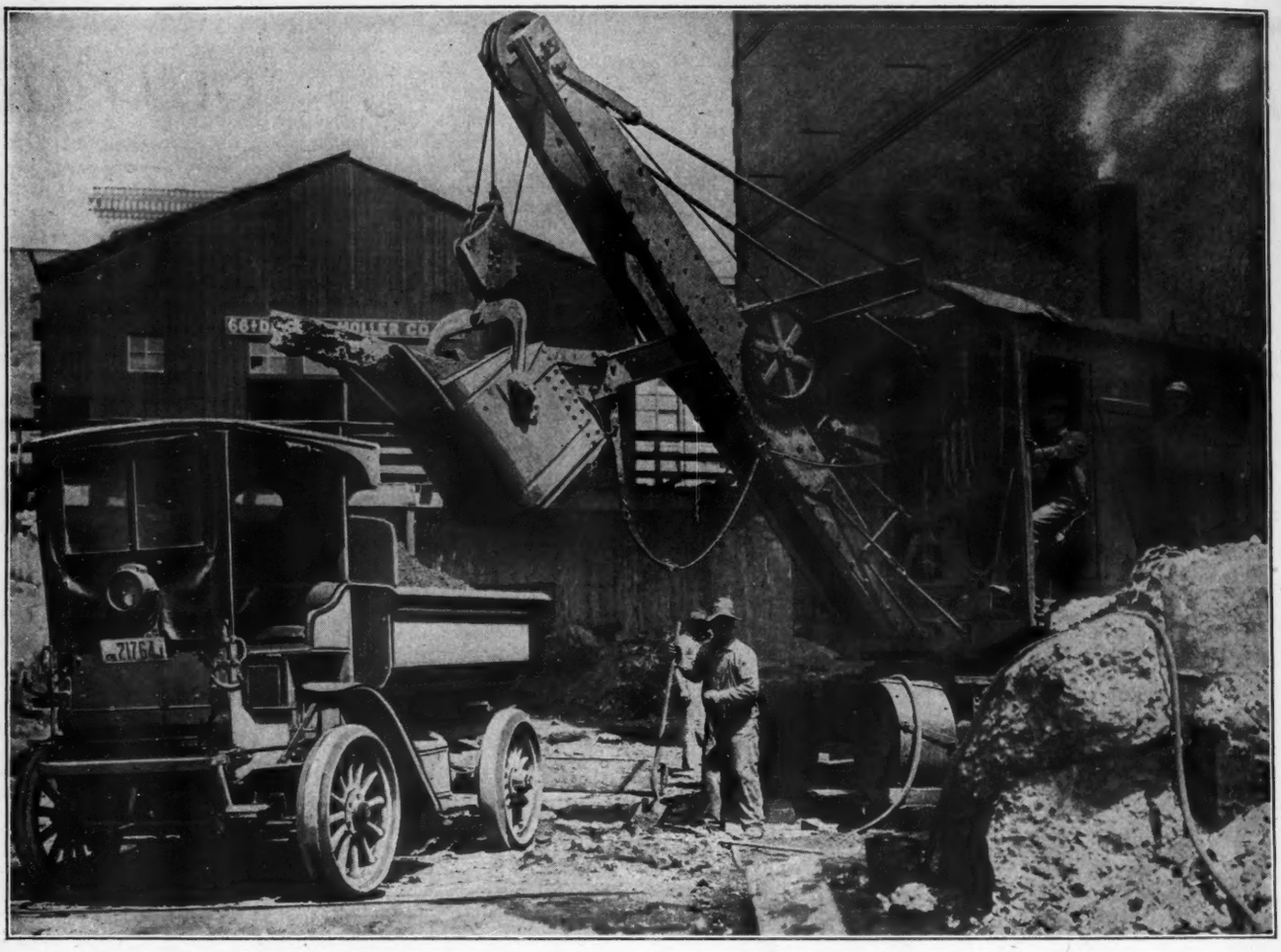
The Columbia One-piece-housing Rear Axle design is particularly well adapted for this hard usage, and just as this design has made a great name for itself in other service it is filling a real need of light truck makers.

The One-piece-housing has been proved by laboratory tests to add 50% more torsional strength than any other known housing design.

The Columbia Special Front Axle, built for light truck use, will be found equally strong and durable.

The Columbia Axle Company, Cleveland, Ohio





These Autocar Assets Are Assets of Every Autocar Owner

The distinctive name, which has always stood for transportation efficiency.

The distinctive design, which is the basis of its recognized efficiency and economy.

The plant at Ardmore, Pa., where the Autocar standard of manufacture has been maintained for over twenty years.

The national system of direct factory branches, developed through a long period of years to assure every Autocar owner maximum operation at minimum expense.

Upon these is built that greatest of all assets—a nation-wide confidence in Autocar transportation—evidenced by thousands of satisfied users in every line of business.

Chassis (1½-2 Ton)
$2300, 97 inch Wheelbase
$2400, 120 inch Wheelbase

THE AUTOCAR COMPANY, Ardmore, Pa. Established 1897

The Autocar Sales and Service Company

New York	Boston	Philadelphia	Pittsburgh	Chicago	San Francisco
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Bronx	Worcester	Allentown	Washington	Dallas	Oakland
Newark	New Haven	Wilmington	Richmond	Los Angeles	Stockton
Schenectady	Springfield	Atlantic City	Atlanta	San Diego	San Jose
Syracuse					Fresno

Represented by these Factory Branches, with Dealers in other cities

Autocar

Wherever there's a road

The Commercial Car Journal

VOLUME XX PHILADELPHIA, NOVEMBER 15, 1920 NUMBER 3

Facts That Must be Considered in Merchandising Pneumatic Truck Tires

Selling Pneumatic Truck Tires Differs Radically From Selling Passenger Car Tires. Business Ability and Common Sense Are Prime Requisites

SOME dealers seem to labor under the impression that selling pneumatic truck tires requires just about the same modus operandi as selling the passenger car tire. Such, however, is not the case. Any dealer who attempts to sell a truck owner along the same lines as he sells passenger car tires will sooner or later find out to his dismay that there's something wrong somewhere.

The following comparison probably tells the story better than columns of type:

Suppose a man were driving in his automobile with his wife to a wedding, dressed in the best clothes he owns. A tire blows out. Rather than make the tire change himself, he might run on the flat tire for a few blocks to have it done at a service station, even at the risk of ruining the flat tire.

But see that man the next morning in his office when he is told that the driver of his pneumatic-tired truck drove a few blocks on a flat tire. You should never know he was the man of the night before. Why all the change?

His motor truck is purely a business proposition, and everything connected with it is on a business basis.

"Truck tires are sold and not bought." That idea is the basis of all truck tire merchandising. The business man is accustomed to being solicited for orders, and does not now go to a dealer to buy tires for his truck.

The Prospect List

With active selling required, the primary essential becomes a list of prospects. No tire dealer needs to feel that he is handicapped in this respect. In the larger centers, he can go to a listing agency, and get the nucleus of a large mailing list. In smaller localities, listing agencies may not exist, but his sources of supply are the county license office, which probably has a list of truck owners, and the state license list, usually obtainable from the Secretary of State. Other effective places where he can turn are local motor clubs, truck dealers, whose friendship he will do well to cultivate, gasoline stations, garage men, and truck repair shops.

This list must be carefully tabulated, so that the tire equipment needs of prospects may be available to solicit orders at the proper time. Permanent records are kept on card forms filed alphabetically.

This card file serves to route the calls of salesmen with some system and an avoidance of the waste effort which will always follow a hit-or-miss policy. Three different colors of cards are recommended, one to show operators using 10 trucks or more, a second for users of 5 to 9 trucks and a third for users of less than 5 trucks.

The reason for such a grouping is that the more trucks a man owns the more valuable he is as a customer, and hence is worth more calls.

Calls Should be More Regularly

The secret of the success of this system lies in the regularity with which calls are made. In order to arrive at a selling basis with a prospect it is necessary to win his good will. Expensive experience has proven that a series of regular calls is the start of more good will than anything else. Perseverence and constant attention to the best interests of a prospect always have their effect.

Some Things to be Kept in Mind

Truck Pneumatics are sold not bought.

A hit or miss follow-up system will not result in sales.

Service is a prime requisite in keeping the truck owner sold.

Every tire dealer should invest in an air-compressor.

Accurate sales records are necessary and no dealer can hope to achieve success without a practical bookkeeping system.

In soliciting the business of a company operating trucks, especially of larger concerns, experience has proved that a salesman should see the man "higher-up." The man who gives the final O. K. to purchases, whether he be purchasing agent or treasurer or some other officer, is the man to solicit for the order. This in no way lessens the importance of developing the acquaintance of garage foremen and truck drivers, but the final authority, who places the order, is the man the salesman must make it a point to see.

Advertising plays an important part in the merchandising of pneumatic truck tires. With the companies whose tire he sells advertising nationally, the dealer has a chance for an effective tie-up with his local newspaper advertising. Another important division of advertising is the letter service to be sent by dealers to prospective customers. These letters are written and imprinted by the parent tire companies and supplied at a nominal cost to dealers on their own letter heads for their signature before mailing. They are telling sales arguments to keep the dealer's name and goods before a prospect's attention in the interval between calls of salesmen.

The merits of that policy will largely determine the success of his business. Is it to be price, service, special discounts, quality, or what?

With most dealers, the sales policy is determined by the company whose tires he sells. The bulk of them, especially the larger companies, are selling on the same basis—one of quality and service, the most permanent and profitable on which to do business.

Tire Service

Some tire dealers have a notion that truck tire service requires an expensive paraphernalia that makes the possibility of profit doubtful. Service starts with a state of mind—of giving a customer every help in finding the full mileage that is built into his tires at the factory. The dealer who does the greatest share in showing a truck owners means of lowering his operating costs stands to gain his business on a permanent and profitable basis.

Just what is meant by saying that service is a state of mind?

Let us take for example the small pneumatic truck tire dealer in a rural town, that boasts a few trucks on pneumatic tires. "Sell tires on a service basis." The truck has four good tires on it, and the dealer who has "service" always in the back of his mind will know from experience that those tires are going to run the risk of certain abuses and of neglect. It will be some time before he can sell the truck owner a tire, but there is much

he can do. The owner may not be careful of his inflation, and the tires will break down prematurely. So "service" will sell him a "pressure gauge" after convincing him of the necessity of using one regularly.

Then a spike may puncture the tire. So the owner will need a spare tube to take the place of the punctured one, and will need also some means of repairing the casing—a cord patch, tire putty and cement, such as every dealer has on his shelves—or should have. These tire savers have been developed side by side with the tires on which they are to be used, and make up part of the service to care for these tires. The truck operator needs these tire savers.

The tire dealer has been able to make a good percentage of profit on these sales, small though they are, but more important he has convinced the operator of this truck that he has a service that is practical to help him to greater mileage. It creates confidence in him in the owner's mind, and on this confidence and goodwill future sales are sure to be built.

Furthermore, he is establishing, himself for the future business that will follow with the inevitable increase in the use of pneumatic-tired trucks. He is making a reputation for service, and will be in a position to dominate his field when competition develops later on.

In the city field, where competition is already keener, to sell on a service basis nowadays requires a little more elaborate program. However, the basis of his service, as well as that of the rural dealer, must remain a determination to help the truck operator to the greatest possible mileage. Too often, dealers take the attitude that service is an expensive by-product that fate forces on him, and so half defeats his purpose before he uses his available equipment, because he does not see how service builds up his business.

Though the service appeal has been developed to a very elaborate degree in some instances,and with good profits, by the way, the essentials are fairly simple.

The dealer should have an inspection service to serve tires actually on the road. This inspection service should arrange to have the trucks come to the service station to have the tires and wheels looked over at stated intervals of two weeks. Tread cuts, fabric breaks, and injuries to tube and carcass can be remedied with tire savers before they grow big and ruin the tire.

This inspection will watch the inflation of the tires with a hawk-like eye. An air compressor capable of inflating the tires he sells to recommend pressures is a practical necessity. It is also a business builder. Truck pneumatics cry for air louder than any drowning man, and the truck is bound to go where air is available for the tires. Without a compressor a dealer is apt to see customers and prospects going to a more wide-awake competitor, and will one day find himself doing business against considerable sales resistance.

Automobile tire dealers found profit in offering free air for motorists. The truck is on a business basis and demands air pressure where the motorist took it more as an accommodation.

The service necessities of a pneumatic truck tire dealer will include adequate stocks and facilities for prompt application and change of tires. He will find benefit in a working agreement with some wheelwright, so that he can solicit change-over business from the operators on solid tires who would find pneumatics more economical in their trucking work.

In order to go after this change-over business intelligently, a dealer must study trucking conditions and know that his recommendations of pneumatic tires is correct, not only as to size, but as to type of tire. If he were to urge pneumatics on a truck owner whose best interests would be served by solids and by skillful selling persuade him to change over, he would stand to lose much more than the profit to be made on that sale. Some other tire man is sure to go over his truck equipment some day with him, and show him that he should have solids. The truck owner's confidence in the first dealer is immediately killed, and he will give him no more business. In all probability he will tell others of his sad experience with pneumatics.

Some tire companies take considerable pains to educate their dealers to give this service of analysis. For instance, the Goodyear Tire & Rubber Company furnishes all truck tire dealers with an elaborate illustrated and diagrammed book of 160 large pages called the "Truck Tire Manual." This takes up exhaustively the question of analysis of truck operating conditions to determine the most efficient type and size of tire.

The list of dealers who have proved this service pudding in the eating is legion. As typical an example as any would be a firm who opened their modest little truck tire business in Philadelphia in August, 1915. At present the firm employs eight salesmen, each with 500 accounts to call upon, and practically 200 of the total prove active each month. They were forced to move twice in the first three years to larger quarters to care for their customers.

From the very beginning they realized that to build solidly they must establish systematic sales contact and that they must give money-saving service to truck owners.

As one of the proprietors says: "By personal solicitation we do not mean that one of our salesman merely makes a perfunctory call. Each of our salesmen knows his territory, and when he calls, it is for a definite purpose. He is there to build good will and pave the way for orders, because he knows this truck owner will be needing tires within the next few weeks.

"Don't get the idea that once we have good will we are content to take orders. Good will wouldn't last long if that were the case. Our salesmen give service to a customer, and every employee at our shop does the same."

Repairing the Giant Pneumatic Cord Truck Tire*

How to Repair Tread Cuts Where the Separation is Extensive. This is the Second of a Series of Articles on This Subject

IN our October number we outlined the method of repairing surface tread cuts and also described the equipment necessary for repairing the larger sizes of cord pneumatic tires. In this installment the repairing of deep cuts and side wall repairs is explained.

Very often tread cuts appear just the same where the separation is extensive as where there is practically no separation. The separation of the cords is usually caused by water or sand working in through the small cut each time it comes in contact with the roads. The water or sand is forced between the layers, causing the separation to continue the longer the tire is run. A surface cut in the tread may be very small and yet causes a very extensive separation of the layers. If such a cut is neglected the damage may extend even to chafing and cutting of the cords, for it must be remembered that all giant pneumatics are of cord construction. If the cords are badly damaged it may be necessary to build an entire section into the tire. In fact, this is the only proper method of repairing where more than three plies of cord have been worn through. We will first describe the repair where the cords are not badly damaged.

Lifting Back the Tread

The first operation is to cut loose the tread on three sides of the separation and extending for three-quarters of an inch beyond the separated portion. This flap can then be laid back on the tire, thus exposing the chafed, damaged fabric and gum. All of this material should be carefully removed.

Cleaned and Buffed

In cleaning the surface most of the original cushion of the tire, which may be still left on the carcass, should be buffed off, just allowing a sufficient covering to remain to protect the cords. In the same way, buff off most of the cushion which is still on the under side of the lifted tread piece, but allow a thin coating to remain over the breaker strip. As in all repairs, all buffing dust must be removed with a wire brush, after which the sur-

*(The method outlined in this and succeeding articles are those recommended by the Experimental Department of the Goodyear Tire & Rubber Co., of Akron, O. This company is continuing its experiments in this work and will welcome any criticisms or suggestions for improvements.)

Tread Cut With Extensive Separation

This apparently insignificant cut in the tread indicated by the arrow is in reality very dangerous and has caused an extensive separation below. A new section will be needed, if it is neglected.

Buffed and Cemented

This shows the damaged surface after it has been buffed and one ply of G-170 cement applied to the carcass. The under side of the surface laid back is then treated likewise.

Tread Laid Back

This shows the method of cutting the tread loose on three sides and folding it back, exposing the surface for buffing and cleaning.

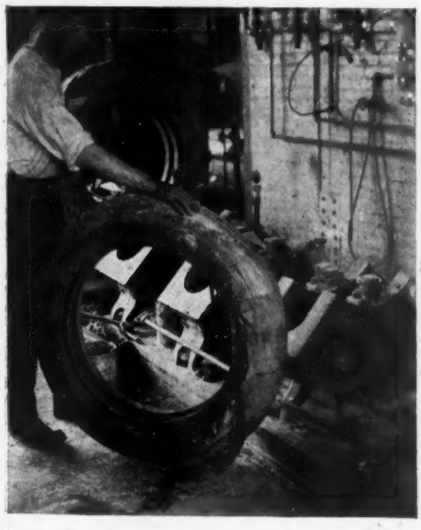
Tread Replaced

This shows the appearance of the tire after the tread has been replaced and the cuts filled in with G-100 gum, the gum, of course, being cut to conform to the shape of the original tread.

face should be thoroughly washed with gasoline.

Building Up

The next step is to build up the tire. First, apply three coats of C-15 cement. Before applying cement, however, it must



Repair Ready for Cure in Sectional Mold

The repaired surface is then filled with soapstone mud and wrapped with muslin to preserve the shape of the tread surface and is then inserted in the sectional mold.

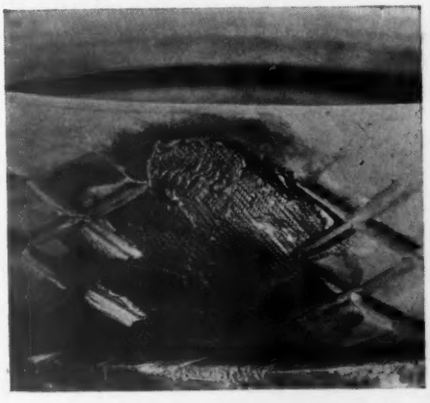
be remembered that after the surface has been roughed up and cleaned, it must be thoroughly dried, as moisture which has gotten into the fabric through cuts, blow-outs, etc., is absorbed by the cotton somewhat similar to the action of a blotter. If dampness remains it will cause separation, blistering, etc., during the cure. A drying-box arranged to discharge any moist air and heated to 150 degrees dry heat, is very effective for this purpose. After making sure the surface is dry, three coats of cement should be applied.

The first coat of C-15 cement should be diluted with three parts gasoline and put on thin and brushed in thoroughly, or

Innocent Looking Tread Cut

This innocent looking break resulted in extensive separation and damage to several plies of fabric

C-15 cement should be used for he first coat. For the second coat use C-15 cement diluted with two parts high-test gasoline and put on about like ordinary paint. The third coat is the same as the second but allowed to dry from 3 to 5 hours as against 60 minutes for the second and about 45 minutes for the first. Cement is not dry until all of the solvent has been evaporated.



Tread After Damaged Portions Are Cut Away

This shows the amount of rubber that had to be removed on account of the small cut. This is after the surfaces have been buffed and cemented ready for filling with G-100 gum.

Cutting Out the Tread Pattern

With a sharp knife and a straight, flexible steel edge the tread pattern is cut into the G-100 gum, of the repaired surface before vulcanizing.

Next fill all compressions in the carcass with G-170 cushion gum. The exposed section of the carcass is then covered with G-170 cushion of the proper thickness, that is, 5/64 in. in 6 and 7-in. tires and ⅛ in. in 8 and 9-in. tires. Next skive the edges down so there will be no sudden change in the thickness of any part. The under side of the lifted tread should now be filled in, in the same manner and any cavities through the tread should be filled with G-100 or G-105 tread repair gum.

Bevel Spliced Edges

Where the tread must be spliced the edges should be beveled. Cover these beveled edges, after it has been replaced in position, with narrow strips of G-170

gum about 1/32 of an inch thick. After the tread has been laid back in its original position stitch it down thoroughly, working from the center outward to prevent trapping of air. The splice may require filling in with G-100 or G-105 tread repair stock. If the design of the tread is lost at this point, it should be cut into the repair stock with a sharp knife. All ragged edges must, of course, be trimmed off even with the surface of the casing.

Curing the Repair

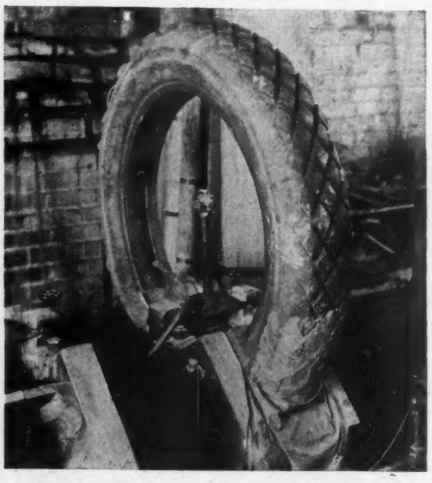
The repair must be cured in a sectional mold. Insert a sectional air bag in the tire and protect the tread portion which goes into the mold with soapstone paste wrapped with a strip of wet muslin. After inserting in the mold, apply bead rings and inflate air bag to 100-lb. pressure and cure according to the time given in the following table:

Size of Tire	Length of Cure	Steam Pressure in the Mold	Steam-Air Bag 100 lbs. Air	Steam-Air Bag 60 lbs. Steam
6 in.	2 hr., 30 min.	40 lbs.	1 hr.	1 hr., 30 min.
7 in.	2 hr., 40 min.	40 lbs.	1 hr.	1 hr., 30 min.
8 in.	2 hr., 50 min.	40 lbs.	1 hr.	1 hr., 40 min.
9 in.	3 hr.,	40 lbs.	1 hr.	2 hr.,

In finishing, as usual, trim off or buff all ragged edges.

Repairing Tread Cuts Where Less Than Half of the Cord Layers Are Damaged

Examine the tire carefully to see whether the damage extends through more than half the piles. The 6 in. and 7 in. Goodyear cord truck tires have ten plies of cord fabric, the 8 in., 12 plies, and the 9 in., 14 plies. If the break extends through more than half of these plies, a section must be built into the tire. If the damage does not extend that far, the repair can be made on the surface of the tire the same as for a tread cut, where the cords are not badly damaged, although there is separation. A cord patch should also be applied on the inside of the tire directly below the injury. A satisfactory job will result if the directions that are supplied with the cord patches are carefully followed in applying them.



Curing the Repair in Sectional Mold
As shown, soapstone paste is used to preserve the pattern of the tread

Same Cut After Loose Rubber and Ragged Edges Have Been Removed

In an accompanying illustration is shown a tread cut at the base of one of the anti-skid diamonds. It looks very innocent on the surface, but proved upon examination to be a serious damage with extensive separation and injury to several plies of fabric. This cut should be treated as outlined in the beginning of this article.

The illustrations show the method of cutting out the tread pattern from the rubber before curing. The cure should be made in one of two ways. One is to cure the cord patch at the same time as the tread repair is being cured, that is, by heat from the inside, by means of a steam sectional bag at 60-lb. pressure instead of an air bag. The length of the cure is the same as given in the accompanying table.

Tread Surface Ready for Cure
Showing the way the repair looks after the tread pattern has been cut out of the gum

Repairing Sidewall Injuries

Scraping a tire against the curbstone, running in ruts or over frozen roads, striking a glancing blow against sharp obstructions are causes of side wall cuts, chafing, etc. Water or dirt works into the cords of the tire and causes trouble later.

Methods of Repair

As usual, cut away all loose rubber and ragged edges, buff the surface thoroughly and again trim off any raggedness due to buffing. Remove buffing dust with stiff brush and wash with gasoline. The surface is now ready for three coats of C-15 cement, applying the same as explained in a preceeding paragraph.

All cavities and all exposed cords should be covered with G-170 gum to a thickness of 1/32 in. The side wall rubber which has been torn, worn or buffed off is replaced with G-105 tread repair gum, and where the cut runs into the tread proper use G-100 tread repair gum in white treads. After trimming all ragged edges the tire is ready for curing.

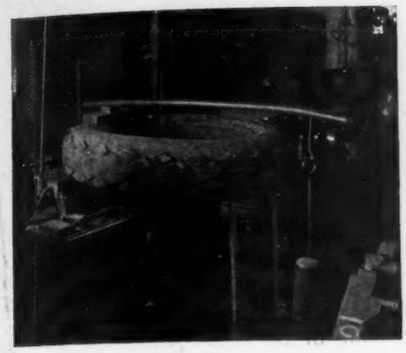
Curing Sidewall Injuries

If the injury extends entirely around the tire a pot heater or a sectional mold should be used. A local spot can be cured on a hot plate, provided sufficient pressure can be applied at this point. If not, a sectional mold should be used. In using the hot plate, support the tire in such a way that the entire surface of the repair will be in contact with the plate, with but a piece of Holland cloth between it and the metal. Place a block inside the tire, apply pressure to the block with a long pressure arm with the usual weight at the end. Continue the cure 60 minutes at 40-lb. pressure.

In using the sectional mold insert sectional air bags as usual. Cover the injury with soapstone mortar wrapped with wet muslin. Place in mold, apply bead rings and inflate the air bag at 100-lb. pressure. Cure for 60 minutes at 40 lb. Successive cures may be made in this way where the repair is too long to cure in a single section.

Large side wall repairs when cured in a vulcanizing kettle require a full air bag of the proper size, then apply the retread

Filling the Cut With Repair Gum Well Worked in With the Stitcher



Curing the Sidewall, Using the Flat Plate

rim, making sure that all bolts are in the curing rims and properly tightened.

The entire tread should be covered with soapstone mortar, but particularly directly above the flange of the curing rims where the cross wrap will not come into contact with the side of the tire. Wrap the soapstoned surface with a piece of wet muslin, cut on the bias, and then cross-wrap twice around with strips of 8-oz. fabric cut 2½ in. wide. This wrapping should be very tight. Inflate the air bag to 100-lb. pressure and keep in the vulcanizing kettle 60 minutes at 40-lb. steam pressure. Trim off or buff the rough edges after the cure.

(*To be continued*)

Sidewall Abrasion, Another Injury That Looks Harmless, But is Not

Are You Selling Trucks to Farmers?

Here Are Some Statistics and the Opinions Registered by Farmers Which Should Help Your Selling in the Farm Field

THOSE who labor under the impression that the average farmer has lots of time on his hands will be interested to know that in a recent survey made by the U. S. Department of Agriculture, the outstanding advantage claimed by the farmer for the motor truck is that it "saves time." Nine-tenths of the 831 farmers who answered the department's questionnaire agreed that the motor truck—although in many cases not decreasing expenses to any great extent—is effecting a saving in time, and that many benefits are derived that are not directly measurable in dollars and cents. Ninety-one per cent believe that their trucks will prove to be a profitable investment.

The investigation was made during the past winter and spring. Farmer truck owners in Indiana, Illinois, Missouri, Iowa, southern Wisconsin, southern Minnesota, southeastern South Dakota, eastern Nebraska and eastern Kansas, who raise corn as one of their principal crops, and who practice the general grain and live-stock farming characteristic of the corn belt, reported to the department the use they make of their trucks, the cost of operating them, the advantages and disadvantages of trucks for farm use, and other related information.

A study of the reports of 831 of these farmers has just been completed by the division of rural engineering of the bureau of public roads and the office of farm management and farm economics.

It must be remembered that most of these farms where trucks are owned are larger than the average, and are located at a considerable distance from market.

Operating Costs 16½c and 17c per Mile

On the average these trucks travel 2777 miles per year, and the cost of operation is between 16½ cents and 17 cents per mile, making the total annual cost from $460 to $470. Each truck displaces an average of 1.2 head of work-stock. With the cost of keeping a horse a year in the corn belt around $200, the reduction in expense for this item is in the neighborhood of $240 per farm. For all farms the average amount of hired help saved by the trucks is $163. On most farms these are the only two items of direct reduction in expense which can be credited to the truck, and on the average they amount to $60 or $70 less than the total cost of operating it.

To offset this added cost, custom hauling done with the trucks amounts to about $50 per year for all farms, leaving only something like $10 or $20 annual net expense which must be more than balanced by the saving of time of the owner and members of the family, the ability to get crops and live stock to market in better condition or at better time.

Some of the important facts revealed by the investigation are:

The average size of the farm is 340 acres and their average distance from market is 8 miles.

Only 14 per cent of them are less than 5 miles from market, and 20 per cent are 15 miles or more from market.

Trucks Increase Marketing Radius

Over one-fourth of these men have **changed their markets,** for at least a part of their produce, **since purchasing trucks.** For those who have changed market, the average distance to the old market was 7 miles, and to the new market is 18 miles.

The rated capacity of these trucks varise from one-half to two tons. Seventy per cent of them are rated at one ton, and only 9 per cent of them at less than one ton.

Experience with trucks has caused 57 per cent of these men to decide that the 1-ton size is best for their conditions, 25 per cent that the 1½-ton size is best, and 12 per cent that the 2-ton size is best. Practically one man in four has decided that a truck larger than the one he now owns would be better suited to his conditions.

Poor Roads Greatest Disadvantage

In the opinions of these men the principal advantage of a motor truck is in saving time, and the principal disadvantage is "poor roads."

As compared with horses and wagons, the trucks save about two-thirds of the time required for hauling to and from these farms.

On the average there are over eight weeks during the year when the roads are in such condition on account of mud, snow, etc., that these trucks cannot be used. The roads on which nearly 95 per cent of these usually travel are all or part dirt.

The condition of the reads prevented the use of the trucks with pneumatic tires a little less than seven weeks during the year covered by the reports, and of those with solid tires a little over nine weeks.

Twenty-four per cent of the trucks are equipped with pneumatic tires, 27 per cent with solid tires, and 49 per cent with pneumatics in front and solids in rear. However, experience has convinced 58 per cent that pneumatics are best for their conditions, 35 per cent that solids are the best, and 7 per cent that pneumatics in front and solids in rear are best.

These men have return loads for their trucks about one-third of the time.

A majority of these men still use their horses for some hauling on the road.

On more than half of the farms all the hauling in the fields and around the buildings is still done with horses and wagons.

About 40 per cent of these men did some custom hauling with their trucks during the year covered by the reports. The average amount received by those who did such work was $132.

Depreciation Largest Item

The average estimated life of these trucks is 6½ years, and on this basis depreciation is usually the largest single item of expense in connection with their operation.

The average cost of operation, including depreciation, interest on investment, repairs, registration and license fees, fuel, oil and tires, is 15.2 cents per mile for

(*Continued on page 100*)

Modern Tire Repairing Equipment is Essential

SPECIAL machinery applied to the innumerable tasks daily confronting tire repairmen brings them into intimate contact with success. Fundamental knowledge of the working principles of effective cost systems employed by all successful concerns teaches us that a dollar's worth of time saved by using more efficient repair equipment is as good as a dollar profit from sales. It is a well established fact that the labor cost is practically the highest single item and if this cost can be reduced the result is not only increased profit to the repairman, but lower job cost to the customer as well thereby promoting satisfaction and establishing a reliable clientele.

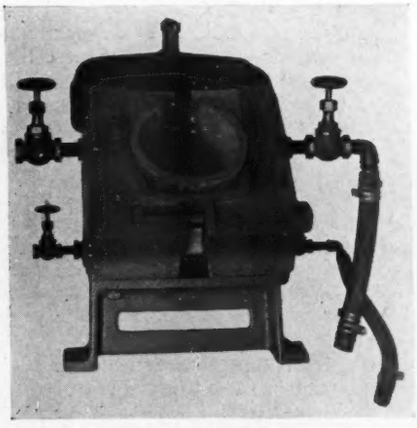
Investigations based on industrial efficiency have proven that not only a greater volume of work per man is turned out, but more satisfactory work in shops where proper equipment is employed. Machinery and tools that assist the workmen to accomplish their tasks with a minimum of effort and confusion, besides saving time, permit workmen to do better work.

With the growing popularity of pneumatic-equipped trucks the need of sources of repairs is being simultaneously enhanced. This illimitable field has been barely touched and in many instances where it is covered it is handled very carelessly and unsystematically. In view of these neglectful circumstances, the opportunity presents itself to enterprising concerns whose sole aim is to render just and equitable service on a big, center-encircling scale, to get in on the ground floor and develop a strong trade relationship in their respective communities. To do this successfully, efficient equipment is imperative.

Some of the appliances offered to the tire repairman for his repair shop are herewith reviewed to give an idea of the great variety from which to choose and also call attention to some devices and products that already have proved valuable in saving time and labor.

Combination Pneumatic Truck Tire Mold

The six-inch Pneumatic Truck Tire Mold, manufactured by the Western Tire & Rubber Works, 243 N. Crawford Ave., Chicago, Ill., is adaptable for both section work and retreading in anti-skid designs. It is a quarter circle tire mold, having high-carbon steel clamps hinged to the mold, composition aluminum bead plates, three-leaf spring and two-point bearing centering blocks, and may be equipped with anti-skid matrices in both diamond and rib tread designs.



Costen Combination Pneumatic Truck Tire Mold

It is a seven and eight-inch combination outfit, eliminating the need of a reducing shell

The extension end plates, B, are bolted to the mold, giving it the semi-curing lap joints, and preventing honeycombing or lumpy spots on the lap. The matrix lock, A, holds the matrices in place in the mold, and the centering blocks, C, not only center and distribute the pressure on the spring when retreading, but they also are utilized as pressure blocks on the bead plates when curing sections.

The model figure 35 is the flat bottom type equipped for retreading, and the model figure 38 is the same excepting that it has the rib tread matrix inserted. The matrices are in two sections, adjustable end to end to allow for the final cure of the anti-skid design. This mold retreads five and five and a half inch oversize cord tires as well as six inch giant pneumatic truck tires.

The six inch mold complete with bead plates, genuine Jenkin's disk globe valves for intake and return, socket wrench and centering blocks (with semi-flat bottoms unless otherwise specified) sells at $155. Extra equipment for retreading sells at the following prices: Spring plate, $10; extension ends, $21.50; set of two sections matrix-diamond, $27.50; set of two sections matrix-rib, $27.50; sand bag, $3.50; mold and all equipment complete for retreading, $245.

Equipment for the Repair of Pneumatic Truck Tires

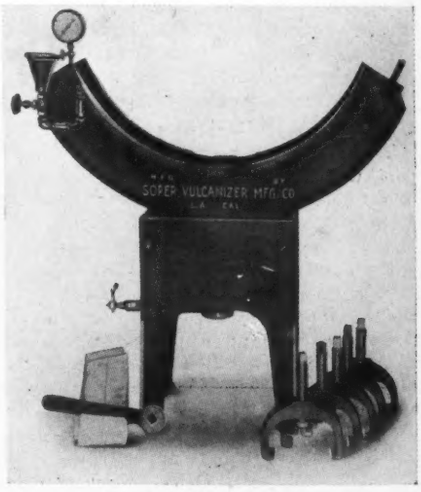
A side-wall vulcanizer designed and built by the Williams Foundry & Machine Company, Akron, Ohio! This equipment is built in two styles—one to generate its own steam and the other style to be attached to the regular steam line in the repair shop. Five carefully machined side-wall plates go with the equipment to take care of side-wall repairs on the 6, 7, 8, 9, and 10 inch tires. The clamping arrangement gives positive pressure on the repair by means of an iron plate on a sand bag. Adjustable hooks on both ends of the plate can be hooked over the lower bead of the tire when it is in position and the pressure arm crank can be utilized in spreading the beads apart to place sand bag and iron plate in position.

Soper Vulcanizers for All Sizes

The Soper vulcanizers which are manufactured by the Soper Vulcanizer Mfg. Co., 110 East 11th St., Los Angeles, Cal., and which are produced in 10 sizes ranging from models No. 17 to No. 26, inclusive, will handle anything from 3 in. to 10 in., with choice of four tread designs.

In construction this machine is of the "Enbloc" type, having water and boiler chambers built in the mold. The molds are all full 1/3 circle cavity, each cavity taking two sizes of tires.

The boiler is self-contained, using gas or kerosene to generate steam. The ends



The Soper Vulcanizer is of the "Enbloc" Type

The molds are all full 1/3 circle cavity, each cavity taking two sizes of tires

of the mold are provided with semi-cure flanges to guard against any breaks in the cure and also to serve as a no heat conductor to the company's special non-skid, matrix, which extends over the semi-cure. Each mold is tested at 300 lb. cold water pressure before they are assembled and steamed.

This outfit is standardly equipped with the following: 5 hand-forged clamps, wrench, circle iron, steam gage, pop valve, water filler,, sand bag, gas burner and valve, and 4 different sets of non-skid designs.

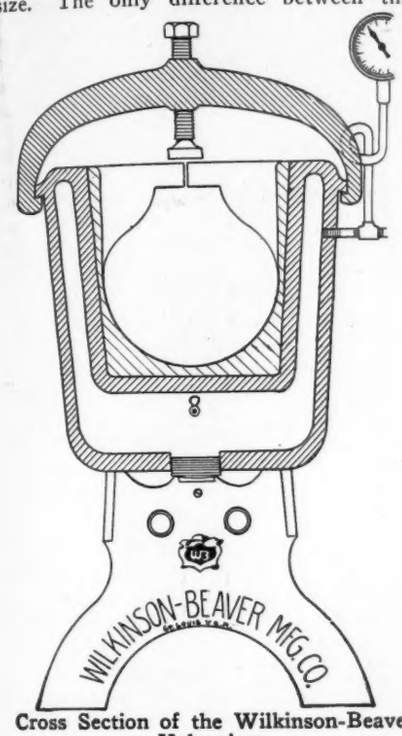
Wilkinson-Beaver Vulcanizer

The Wilkinson-Beaver Mfg. Co., 1414 Chestnut St., St. Louis, Mo., is placing on the market vulcanizers known as type M and O, for the vulcanization of pneumatic truck tires ranging from 6 to 12 in., in size. The only difference between the two types is a matter of size, model M vulcanizing all sizes of truck tires ranging from 6 to 8 in., inclusive by the utilization of molds in the base proper for the different size tires and different types of tread, and model O all sizes up to 12 in.

The molds, or sleeves as they are sometimes improperly designated, are made of an aluminum alloy which heats very rapidly. In addition to the feature of great heat conductivity, using this metal eliminates the effort required for lifting shells made of cast iron.

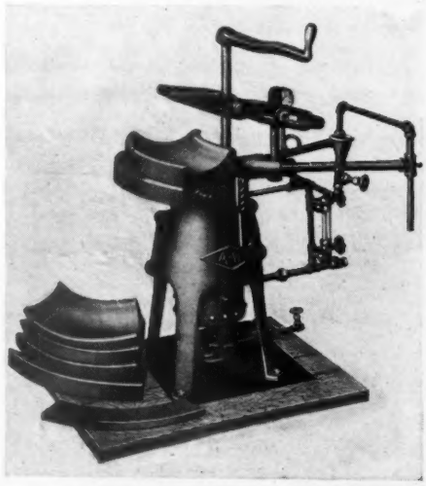
The steam chamber surrounding the mold, as may be seen from the accompanying illustration is said to make a perfect cure on the side walls of large truck tires as well as on the tread. Special aluminum alloy bead molds are furnished with each machine, alloy again having been chosen because of its low specific gravity.

Another meritorious point of advantage is the fact that if any of the various tire manufacturers decide to change the tread design this mold can be made to conform to the new design in question by slipping the proper mold, which in that event will be procurable, into the same body. The molds, which are presently furnished on this machine, are the round and square or flat top tread type will take care of any new style truck tire treads introduced.



Cross Section of the Wilkinson-Beaver Vulcanizer

It consists of the following assembled units (refer to the illustration): Stand or base; outside shell or vulcanizer proper, which is capped by a clamp; gauge; aluminum alloy mold supported by the inside shell; steam cavity, between the inner and outer shell; and two aluminum alloy bead molds.

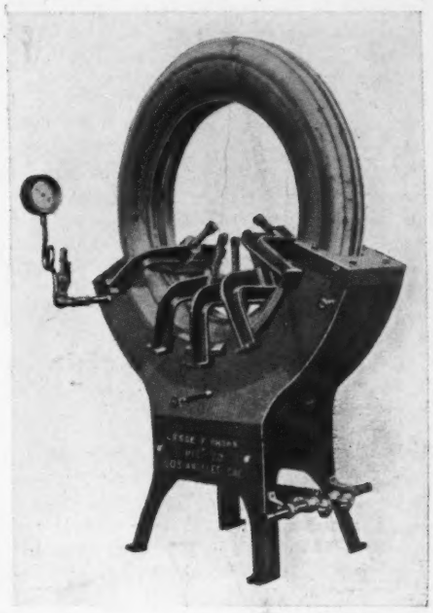


Akron-Williams Type of Pneumatic Truck Tire Sectional Vulcanizer

The manufacturers of pneumatic truck tires have more or less conformed to two types of tires in their production—the flat tread type and the round tread type. Owing to the thickness of the walls of these big tires, the Williams Foundry & Machine Company found it necessary to develop two types of sectional vulcanizers in order to insure the most effective vulcanization to the repairs. This illustration shows the round tread type of sectional vulcanizer.

Jesse F. Brown Retread Molds

This is a 6 in. retread mold for pneumatic truck tires, one of a complete line put out by Jesse F. Brown Mfg. Co., 2652 Long Beach Ave., Los Angeles, Cal. Although this machine is equipped with gas burners, as may be seen from the illustration, it is also furnished without burners to connect direct to steam or with gasoline burner to generate its own steam. Any desired pressure of the tire against the surface of the mold may be obtained by the five strong clamps. This mold is equipped with fire hose, sand bag, safety valve, steam gage and other miscellaneous fittings.



Jesse F. Brown Repair Molds

This machine can be obtained with gas burners or without for connecting direct to a steam line

George H. Zuver has been added to the board of directors of the Detroit Auto Dealers' Association to fill the vacancy occasioned by the resignation of J. C. Ayers. Mr. Zuver will also soon take over the management of the Defiance Motor Truck Co., Defiance, O.

Akron Pneumatic Cord Truck Tire Mold

These molds, manufactured by the Akron Rubber Mold & Machine Co., Akron, Ohio, are for repairing tires of from 6 to 7 in. in size for the flat tread type. Round tread types for these sizes are also made.

Twin Full Circle Tire Mold

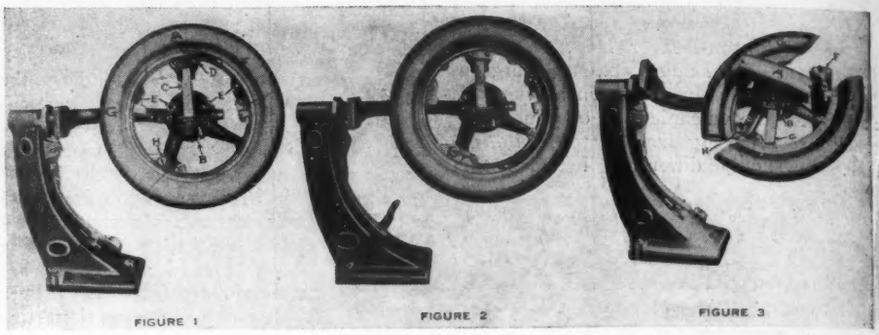
The Twin Full Circle Tire Mold vulcanizer, manufactured by Chas. E. Miller, Anderson, Ind., is designed for either manufacturing new cord tires or rebuilding old tires. As this outfit consists of two distinct units two complete tires can be made or repaired simultaneously, both of one size or of two different sizes, such as 30 x 3 and 30 x 3½ and 31 x 4.

These molds are accurately machined and regularly furnished with ribbed tread, although any tread design can be had. The working principle is simple and convenient. All three members are hollow or cored to receive steam. The center member is cast in two separate pieces so that a combination of two sizes can be placed together where the diameters are almost the same. When completely assembled the center member is stationary and is supported by a substantial stand, well braced, so that the hinged members can be opened or closed at will. It is well balanced and occupies little space.

There are extensions on the inside circles of both sides of the center member, which act as a rim when placing tires in the molds. This allows the tires to be placed in the molds so that the beads can be set in properly to avoid any possible meshing of the beads. The center member has one-half of the tire mold machined on both sides and the two outside hinged members each have the corresponding halves.

Live steam is admitted to all three members through pipes connected to the under sides. The two outside hinged members have hinged swing steam joints directly under the main hinges, and can be opened or closed at will with a full head of steam. No steam is lost whether the members are opened or closed. All condensations in the molds are taken care of by the same pipes through which the steam is admitted, being the lowest place. Air vent cocks are provided at the top of each member to discharge all air or foreign matter other than dry steam. A steam gage and thermometer are furnished.

Two casings of one size or of two different sizes can be cured at the same time without the loss of steam, except condensation in the line, and this can be returned directly to the boiler. No valves or unions are necessary to open and close while operating this outfit, due to hinged swing steam joints. The outstanding feature of this tire mold is that when a tire is made new or repaired every cord in a cord tire or every fabric in a fabric tire is tuned up to an even tension.



De Mattia Tire Building Stand With Core for Producing Pneumatic Tire Casings
The first figure shows the stand ready; second, with casing completed, and third shows the stand with core collapsed

The Time Saver Building Core

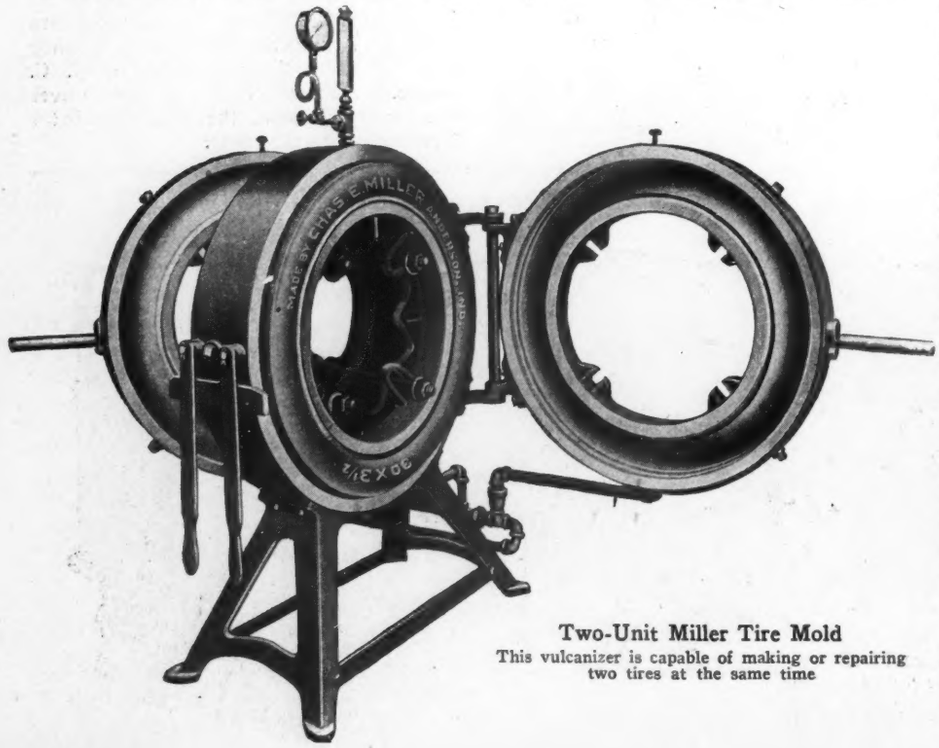
Tire manufacturers have found that the most effective and successful method of manufacturing and curing tire casings, in cord fabric especially, is by the use of expanding internal pressure, which imparts a uniform tension upon each thread and ply of fabric simultaneously with the setting and curing of the rubber while under heat. To perform this operation it is necessary that the tire casing be removed from the core or form preparatory to vulcanization.

The accompanying views illustrate the tire building stand with core or form for producing pneumatic tire casings, manufactured by the DeMattia Bros., Inc., Garfield, N. J. The first view represents the stand and core ready for operator to build the casing. Second view shows the stand with casing completed. Last view shows stand with core collapsed and sections held by chuck on stand with tire removed.

With the equipment herewith illustrated a completed tire casing can be removed, and the core or form reset for building next tire, all in less than one minute. Operation is performed by one tire maker or finisher without lifting core from the building stand or machine.

To remove the complete casing the core is preferably set in a horizontal position and arm locked to stand. A wrench is furnished with which tapered section A is withdrawn from the casing by operating the worm B bringing it to stop located on top of rack C. The tapered section of core is then out of contact with tire and is lifted upward swinging on hinge D, allowing it to rest on chuck. A special wrench is furnished that fits into holes E of sections F and G also center portion of chuck. By using this wrench section F is swung inward from tire and is then pushed down out of the way as shown in illustration. Section G is then pulled inward with same wrench swinging on pin H. The tire casing can then be removed from the core by passing it through the opening that will be formed by collapsing the sections A, F and G. After removing the casing, core is worked back in original position and is ready for next tire.

This outfit eliminates the unavoidable throwing of the core with the finished casing on floor or bench, which requires two strong men, thus effecting a saving in time, does not disturb the neighbor tire maker to lift core, effects a marked saving in core repairs as the joints of core do not come in contact with one another, saves floor space, and eliminates possible bruising of tire. By a small rearrangement of the arm this core or form can be fastened to any standard tire building stand.



Two-Unit Miller Tire Mold
This vulcanizer is capable of making or repairing two tires at the same time

The Sunlite Retreading Oven

The Sunlite oven, manufactured by the Sunlite Co., McKinney, Texas, retreads and rebuilds by a dry process in one operation tires of any size. It cures as many as four tires at one time, saving time and labor. Good materials are used in its construction. The manufacturer emphasizes the fact that the results obtained by this oven give unfailing satisfaction.

Sunlite Retreading Oven
This oven is adaptable for retreading all sizes of tires, up to the 40 x 8 in. It will accommodate two 30 x 3½ in. tires at a time

Lowell Single-Cavity Vulcanizer for Giant Pneumatics

The Auto Tire Vulcanizing Co., Lowell, Mass., manufacturers of a full line of truck tire equipment, is producing a mold, known as model 21, that is a three in one outfit.

This round tread repair mold, is designed so that one cavity will take care of 6, 7 and 8 in. tires by the use of reducing shells for the two smaller sizes. This machine has been on the market for the past year and a half, and now it is the intention of the company to manufacture in addition a mold for the repair flat tread tires also. These molds are designed for use with both separate boilers and of the self-generating type.

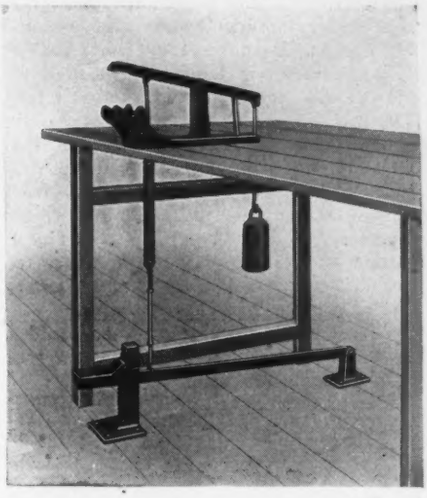
The reducing shells of these molds are machine finished and polished and are made to fit accurately all tires of their respective sizes. The bead molds are all of same diameter. The diameter of the reducing shells is milled to conform to the circle of each respective tire, thereby eliminating the marking of a tire at the end of the mold. The shipping weight of this outfit is approximately 800 lbs.

This outfit, when equipped with steam gage safety valve, filler valve, water level valve and No. 5 inside curing core, yokes and screws, complete with burner to be connected to the generator, sells at $175. If an addition to the foregoing gas-burner is attached to generate its own steam, the selling price is $184, and with the addition of a gasoline or kerosene burner to genrate the steam it sells at $193. The vulcanizer cavity measures 8 in. wide and the diameter of circle 42 in., the length of which is one-quarter of a circle.

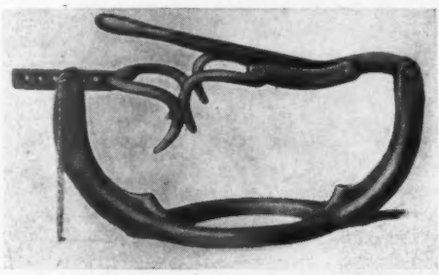
Tube Splicing Mandrel Clamp

The P. I. W. Tube Splicing Mandrel Clamp, manufactured by the Pechstein Iron Works, Keokuk, Iowa, is positive and quick in its action.

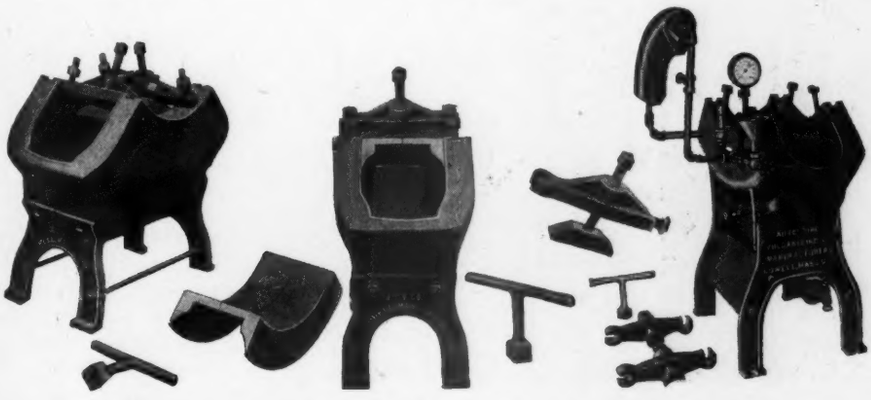
This outfit can be placed on any height of table, as a turnbuckle allows adjustment to any reasonable height. A heavy spring gives a positive tension on the splicing mandrel and holds it firmly while a tube is being spliced. The tension of the spring is held by a foot-operated ratchet, which leaves both hands free to work on the tube. The release is also worked by the foot and the weight makes the action of the movable arm quick and certain. The opening of the jaws is not obstructed in any way and always stands open when the foot ratchet is released. Mandrels of any size from a bicycle tire to a truck tire can be accommodated. It is built of a fine quality of grey iron and wrought iron.



P. I. W. Tube-Splicing Mandrel Clamp Mounted on a Table



An Effective Pneumatic Truck Tire Bead Spreader
A Williams Foundry & Machine Co., Akron, O., development for the quick spreading of pneumatic truck tire beads. It bolts to the floor, the big tire is rolled in position and the hooks grip the beads. The lever action, which is adjustable to different sizes of tires, spreads the beads apart and locks against the back-pull. Sand bags or air bags can be easily placed in the tire. The tire beads can be spread as far apart as the operator desires for repairing or inspecting the inside of the tire.



Showing Lowell Single-Cavity Vulcanizers for Giant Pneumatic Tires

Twentieth Century Steam Curing Bag

The Twentieth-Century steam curing bag for the repair of pneumatic truck tires is used inside the casing like an air bag, but unlike an air bag it is permanent equipment in the repair shop, and is said to eliminate waste of material and loss of time. These steam bags, which are manufactured by the Steam Bag Corp., 1545 Broadway, Denver, Colo., are offered in the following sizes: 3, 3½, 4, 4½, 5, 5½, 6, 7, and 8 in. sizes.

Not the least of all its features is the fact that after 500 cures, which is the estimated number of times that it can cure effectively, the framework not being affected and which lasts indefinitely, requires but a new jacket permitting the bag to be used for 500 more cures.

It is claimed that both inside and outside cures can be made in thirty minutes in a single operation with the steam bag, and with insurance against overcooked rubber or undercure inside the tire.

The permanent parts of the steam bag including everything except the jacket are made of metal and are claimed to last indefinitely. No expansion is lost at the ends of the steam bags, because the ends are united by a flexible connection which is hidden by the elastic curing jacket. All pressure is, therefore, lateral.

These bags, ranging in price from the 3-in. to the 5-in. sizes, from $4.15 to $6.25 apiece.

Here is a New Plan of Merchandising Trucks

Any Dealer Can Do the Things Which Have Been Responsible for the Success of the Company Mentioned in This Article. At Least They Are Worth Trying

By HARRY R. BRATE

IN every commercial enterprise there are certain conditions and practices, which, because they have always existed, it is taken for granted that they must necessarily continue unchanged. The merchandising of trucks is no exception to the rule. Many dealers—and there are many — who apparently noted that Jones didn't have much of a store where he did business as a truck dealer, and, therefore, took it for granted that any old place would do as a "home" in which they could house a few trucks and render a sort of service to their customers.

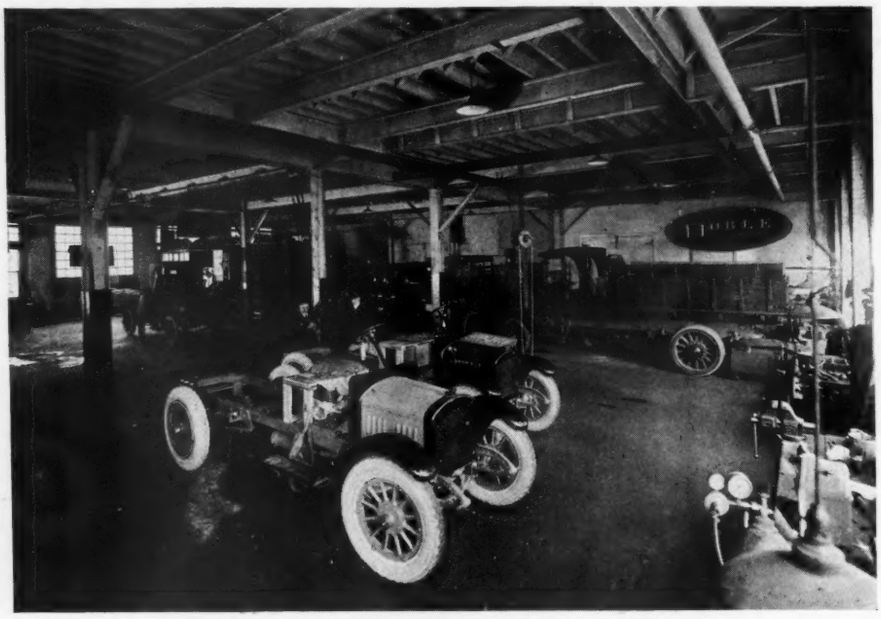
There was a time when that could be done. It is still being done, but the truck dealer has found an establishment must present the appearance of permanency, if he hopes to get the cream of the trade.

The fact one member of the firm formerly sold diamonds for Tiffany of New York, and the other member traveled up the high-ways and by-ways selling lace curtains for Marshall Field Company of Chicago, may in a measure account for some ideas of merchandising used from the start by Owen & Graham of Detroit.

"We determined," said Harry R. Graham, "when we entered the truck business, not to stick to the beaten path, as we felt that the establishments in which many of the truck dealers were housed did not invite the appearance of permanency, and this, we believed, was a detriment to trade. We believed trucks should be sold and a satisfactory service rendered thereafter, the same way as any other first-class business is conducted."

With this idea in mind, they picked their building and location. The building was one that gave the appearance of stability, and is centrally located on a prominent thoroughfare. They spent something like $20,000 in fixing it up and it has paid for itself already, taking as they did a long time lease.

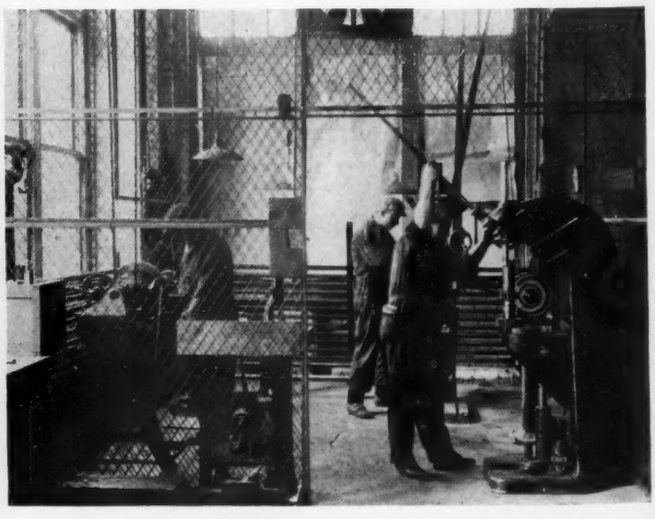
"Like every firm practicing sound business methods," said Mr. Graham in replying to my question as to the character of their trade, "we first look a man up to see to whom we are selling. We have made it a practice during our five years of business as truck merchants, to sell only to firms who have the money. By following this plan we find that the banks will loan money to us, whereas if we just sold trucks without any regard to the financial responsibility of our customers we would soon have tied up all of our resources, with little chance of being able to make a turnover ourselves. For that reason we investigate the men who desire to buy, and inquire around to see how much money they have with which to purchase a truck. Of course, this applies to concerns with whom we are not acquainted and particularly to men who come in to buy trucks for hauling and road building, and who usually have but little capital. We endeavor to discourage buying with latter class, especially if a man says he can only pay 25 per cent down. We tell such a prospect right at the start that if he has no more money than that, that a truck would be unprofitable. In other words, we un-sell him as fast as we can. Most of these fellows have figured the thing all out on



General View of Service Department

Notice the five-ton overhead crane, well-lighted work benches. Neatness and cleanliness is their motto, be it service room or salesroom

Outside of the Private Offices is a Little Waiting Room, Furnished in Keeping With the Establishment



A Part of the Machine Room. They Are Equipped to Give Excellent Service and Save Valuable Time for Customers

paper and can tell you where they are going to make a lot of money. They invariably figure that they will be able to work thirty days a month, when in reality they will only be able to get in eighteen or twenty working days. With such a limited capital, a few rainy days, bad luck with tires, and other repairs, they will soon run behind with their payments and we would have a second-hand truck on our hands. It has been the rock on which many a dealer has dashed an otherwise profitable business, and we are keeping away from it. It isn't good merchandising. Out of the $600,000 worth of business we did last year, we only have $159 outstanding, which is a pretty good record. Of course, we sometimes do a credit business. For instance, a certain coal company called us up a few days ago and said that they had over fifty cars of coal coming in at about the same time, and wanted three trucks, but would have to have ninety days time. To be sure we were glad to accommodate him. The same things often happen with other companies to whom we sell, but they are all financially responsible.

How Salesmen's Territory is Handled

"In handling our salesmen, we have divided the city into four parts with a man for each division. We have endeavored to divide the city as to industries, population and number of trucks owned, so that each salesman has been given a fair division. Each salesman works on a straight commission, and over these men we have a sales-manager who works on a salary and commission. The commission which is extra makes it an incentive for him to get out and help the men, although the commission he gets does not cut down the amount the salesman receives. Each man receives credit for every sale made in his territory, as it is often not their fault if they do not make the sale at the time they are working hardest for it. We often make sales two or three years after a man has been working on a prospect. It is the sales coming from a territory spread over a number of years that count."

"We established our business with some very definite ideas as to service. We knew that the best truck made would require considerable attention over a period of years, and for that reason we made it our aim to give the best service possible.

Appearance of Service Station an Important Factor

We also realized that probably ninety per cent of the trucks are sold at the service station, or back of the store, as we sometimes call it. For that reason we have always insisted upon keeping the service station and stock room just as clean and attractive in appearance as our sales and show rooms. All too often the service station, because the work is necessarily dirty, is apt to take on a rather untidy and slovenly appearance. We have found that our customers are quick to notice this and that they appreciate the orderliness and cleanliness of our service department. We see to it that there is a place for everything and that everything is kept in its place.

This Shows a Section of Stock Room

There is a place for everything. Each bin is cleaned every day by compressed air, and the front of the bins painted every two months

"In connection with this service, I neglected to state that Mr. Owen looks after the service end. He meets all of the drivers when they bring in their trucks and keeps in touch with the condition of the truck, and I believe that our success is due, in a large measure, to the fact that one of us is always on the job. Personal contact helps immensely, and I am sure that we don't lose any business by showing an interest in a customer's truck after we have sold it to him and that we are not afraid to pass the time of day with a driver when he is in our establishment. We cultivate this good will.

"We have our service department equipped with modern machinery and can take care of any kind of service, all of which helps bring business. How this is appreciated can be illustrated by what we did for one of our customers who owned a fleet of about thirty trucks, some of which we sold him and some of another make. One of the other make was laid up and for some reason they were unable to obtain the part from the factory. He told us that the truck had been laid up three weeks because of it and wanted us to look it over and see if we couldn't make a part for him. We undertook the repair and billed it at the same price he would have had to pay the factory. It cost us $12 to make the part, and we billed it to him at $4.80. He noticed the bill when it came in and called us up. He said that it wasn't right as it must have cost us a great deal more. We told him that it was simply a part of our service, and we never overcharged a customer. Needless to say it brought business.

"Another example that service is the big thing in merchandising was brought home to us by an experience we had with a customer who needed a truck, but said ours was too high priced and bought another make. In fact he bought five of the other make, but one day he called up and wanted me to come down to his office. He asked the price of a ton truck. He then said he wanted a discount, the same as he had been getting from the other dealer. I told him that we had only one price. Just then his shipping clerk came in and said, 'another of those trucks is laid up again, and it will take three weeks to get it in shape.' 'Well,' he said, 'you fellows do give the service and that is worth a lot.'" And he gave me an order.

"The appearance of the service rooms sold a truck for us just the other day. A gentleman came in and said he wanted to look around our place. I told him to go ahead as I had in mind that he was an insurance inspector. He went out into the service department and when he came back he asked, 'Where are your offices?' Soon afterward he come into my office and said, 'I want to buy two 2-ton trucks—your place looks as though you were going to stay in business.'"

A visit to the service room of Owen & Graham reveals the fact that it is not an ordinary service department. It is well lighted, the work benches are solid and ridged, covered with hardwood flooring which is renewed every six months. Two men work at a bench and each bench is cleaned and washed with gasoline or kerosene each night. "Cleanliness," said Mr. Owen, "induces good work and is a good advertisement." They have installed a crane which saves the work of five men; a valve-grinding machine which has cut the cost 75 per cent; in fact, they have installed modern machinery and tools which have cut the cost of service between 25 per cent to 30 per cent, the benefit is given to their customers.

In their stock room two stock keepers are employed. These men are salesmen, not mechanics, and they work hard to sell parts. Here as elsewhere there is a place

Chow Time; No Cold Lunches for These Men.

A good, wholesome meal makes the afternoon pleasanter and consequently they do better work; all to the advantage of their customers.

for everything. Magneto points and valuable parts are kept in a safe. Grease and oils by themselves; there is an overhead trolley for placing the heavy springs and other parts on racks. Every day the bins are cleaned with compressod air which blows out all the dirt and dust and the bins are repainted every sixty days. Each stockkeeper is paid a salary and a commission on the net profit of the department. Junk, which is a source of annoyance in every service room, is picked up by the stockkeeper, sorted, and then sold to the junk man who now pays pretty near what it is worth, whereas the superintendent, who formerly used to see about it, used to get "hung up."

Servicing the Service Men

Undoubtedly, Owen and Graham have surrounded themselves with as fine a lot of mechanics as can be found, and they are men who stay with them year in and year out. They are treated as an important part of their organization and made to feel that they are such. They have no labor troubles in their establishment; you can't hire one of their men away. If the men have put in an extra hard week, they are very likely to find an extra ten spot in their pay envelope Saturday night—given as a bonus. Each man is given two weeks' vacation with full pay, the same as is given the office help.

"One of the things which seemed to have pleased the men very much," continued Mr. Graham, "has been the installing of an electrically equipped kitchen from which the boys are served warm, clean, well-cooked meals every day. We did not think that men engaged in heavy, hard work, as they are all day, could keep healthy and do good work when eating cold lunches or the light lunches such as are served in the neighborhood. The plan is that the company furnishes the kitchen complete with all equipment and utensils as well as table dishes. The boys appoint one of their number to cook and purchase their supplies, the cost of which is divided between them. They take turns at this, the one doing the cooking laying off, on our time, half an hour before dinner time. He waits on the others while they eat and then they wash the dishes while he eats. The boys take great pride in their kitchen and keep it spotless. Average cost to date for all their meals has been between thirty and forty cents for a good, clean, wholesome, hot dinner."

The front of the building, which is two stories high, contains the sales room on the first floor which is 90 feet front by 30 feet deep, with plate glass on three sides. This room is finished in white enamel and mahogany with mosaic floors. The second floor contains the offices finished in mahogany and attractively furnished.

Did it pay to depart from the beaten path of merchandising trucks? A $600,000 truck business a year is some business.

New York Motor Truck Show Predicted to Go Over Big

The generous co-operation Mr. Pratt is receiving from all quarters and the support which has already been pledged illustrates that the Motor Truck Show to be held in the 12th Regiment Armory under the auspices of the Motor Truck Association from January 3rd to the 8th, inclusive, 1921, will receive the hearty endorsement of the trade in general.

The most difficult task confronting the show committee is the satisfactory distribution of available space, as the amount is limited and the list of applicants large. Notwithstanding the fact that the 12th Regiment Armory has 50 per cent more space than has Madison Square Garden, the applications to date exceed the total amount.

Mr. Pratt plans that this show shall be a little broader in its scope than have been those of the past and while it may still serve the manufacturer to the same extent as heretofore the dealer is to receive very definite attention. The Association, because of its various affiliations is in a position to bring together the buyer and the seller and expects to make of the show a meeting ground where they can get together and solve their problems to their mutual advantage.

An information bureau will be established where expert advice may be obtained on the various subjects that interest the truck user, special attention being given to the following subjects:

How to select a truck best fitted for your special needs. How to operate a truck at minimum cost. What system of accounting will best apply to any specific case and show the leaks in operation that are so expensive. How to prevent accidents. Insurance costs and protection. Laws and ordinances affecting the operation of trucks and trailers on the public highways. Highway transportation and the long-distance haul which has gained so much prominence of late through the ship-by-truck movement, will be taken up thoroughly.

Lectures will be held on this and other subjects and articles by eminent authorities on each will be published and distributed at the show. In this connection special attention will be given to co-operation of the motor truck with the railroads.

The congested condition of New York City's transportation will be in the hands of a special committee who will receive suggestions from any one interested as to its practical solution.

The last subject alone is of interest to every business man in New York and the Motor Truck Association will have the co-operation of the Merchants' Association, the Chamber of Commerce, the Railroads, etc. A committee of special interest will be one composed entirely of truck operators who will receive complaints from anyone operating a truck in which he may set forth that which seems to him a descrepancy in the particular make of truck he uses. These complaints will be turned over to the maker of the truck referred to in each case and it is expected that much information of value may be accumulated in this way.

The Show Committe has engaged the January issue of Highway Transportation as its official program and has ordered a minimum of 25,000 copies which will be distributed free of charge to all entering the armory.

The program number will also contain many interesting articles in addition to the program and will be useful as a book of reference after the show is over.

To Combat Truck Overloading

The National Motor Truck Committee of the N. A. C. C. has recommended that a campaign be carried on to dealers and users calling attention to the dangerous practice of overloading motor trucks. Many states are taking action against this evil, contending that it is damaging the roads. A pamphlet is being prepared and will shortly be given wide circulation.

EDITORIALS

Looking at It in Another Way

IT is not our purpose to reiterate what we have said time and again in these columns on the subject of over-loading motor trucks. But we are just wondering whether or not the dealer would consider it part of his business to discourage over-loading, if he took into consideration the fact that whenever an owner finds that it is necessary to consistently over-load the truck, he really could employ another truck profitably. Every manufacturer and every dealer who knows his business realizes that any over-loaded truck needs more service and goes to the junk pile sooner than the truck that is loaded only to its capacity. If a serious attempt were made by the whole industry to eliminate the over-loading evil, wouldn't it be possible to put more trucks into use?

A Short-Sighted Policy

QUITE a number of motor trucks built today are equipped with starting-and-lighting systems, but the majority are not. To the manufacturers of motor trucks not equipped with starting-and-lighting systems we wish to call particular attention to the following fact: Although trucks may leave the factory without starting-and-lighting equipment, it should be the manufacturer's business to recommend at least one standard outfit which can be mounted upon his product without undue additional expense or unnecessary trouble to the dealer.

We had occasion to hear of an instance recently where a dealer had to spend considerable time trying to locate a starting-and-lighting outfit which could be attached to this particular truck without interfering with other parts underneath the hood. He found that there was no room for one of the units of the starting-and-lighting outfit. There seems to be a feeling on the part of the manufacturer that such things could be passed up and that the dealer probably will find a way out. Such a policy, however, is absolutely wrong. The designer certainly should keep in mind the fact that the dealer is not in business to experiment or waste his time trying to find equipment which will fit his particular truck. As a part of the co-operation which the factory can give, nothing would be of better value to the dealer than proper provision by his manufacturer for the attachment of standard equipment. This is particularly true in the case of such equipment as factory experience has found to be especially fitted to the particular truck in question.

It must be remembered also that the dealer should be advised as to just what equipment is recommended because all standard units of a standard type may not be applicable to the truck in question. In connection with such important units as the starting-and-lighting outfits, as far as performance is concerned, there is no excuse if the manufacturer does not recommend the proper make, or makes, of unit suitable for his product.

Wasting Gas by Idling

THE fuel problem is one which will be with us just as long as passenger cars, motor trucks and tractors are utilizing the petroleum product. In a letter recently sent out by the Secretary of the American Petroleum Institute to the members of the Society of Automotive Engineers, the proposition was put up to the automotive engineers to design an engine that will give from 20 to 30 miles on a gallon of gas instead of from 7 to 12 gallons. This letter asked for suggestions, many of which were received.

One of these answers calls attention to the waste of fuel by idling engines. It goes on to state that, as a particular suggestion for saving gasoline, the government should be interested in bringing forth stringent regulations to prevent drivers from letting their engines idle during loading and unloading periods, periods which often extend from 15 to 20 minutes, and sometimes more.

Something should certainly be done to eliminate this condition. One can hardly travel in any business section, where motor trucks are being loaded and unloaded, without seeing at least a half dozen trucks with idling engines—wasting gasoline. Incidentally, it is not alone the gasoline waste that should be taken into consideration but the tendency of the engine toward overheating and carbonizing. The dealer can show his interest in the matter by advising his customers to get after their drivers to stop this practice.

News of the Trade in Brief

(For Factory Items, Personals, New Incorporations, Etc., See Pages 92-94)

Kansas City Dealers Hold Meeting and Election

Members of the Kansas City Motor Car Dealers' Association held their annual banquet and election of officers at the Muehlebach Hotel, Kansas City, the evening of October 25 and named officers as follows:

President, J. A. Butler. Butler Motor Co., vice-president; Estel Scott, General Motors Truck Co.; directors, E. M. Lied, Willys-Overland Co.; R. C. Greenlease, Greenlease Motor Car Co.; J. Frank Witwer, Southwest Motor Co.; J. Frank Martin. Buick Motor Co.; Nelson Studebaker Riley, Studebaker Riley Co.; W. J. Brace, Hudson-Brace Motor Co., and Harry Crosbie, Crosbie Bros.

E. E. Peake, who has for seven years guided the destinies of the association as secretary-manager, was continued in this office, and E. H. Coleman is retained as assistant to Mr. Peake.

The Kansas City association has become one of the most efficient working organizations of dealers in the United States and is planning to broaden its scope during the coming year. An association of service managers will be formed auxiliary to the dealer body and other work will be taken up for the betterment of the industry in Kansas City.

At the annual meeting P. E. Chamberlain, of Denver, spoke on "Selling Service Intelligently," giving the Kansas City dealers the constructive message that he is spreading throughout the country under the auspices of the National Automobile Dealers' Association. He was listened to with the keenest attention and his talk met with much sincere commendation.

M.T.A. of A. Changes Address

The Motor Truck Association of America, Inc., has given up its quarters in the United States Rubber Building, 1790 Broadway, New York, to go a few blocks further uptown, where it will be located at 144 West 65th St. Quarters have been obtained in a remodeled building, where all business will be continued.

Plea for Co-operation at Hardware Convention

Emphasizing co-operation as the solution of America's industrial problems, A. H. Nichols, of Detroit, speaking at the convention of the Automobile Accessories branch of the National Hardware Association of the United States at the Marlborough-Blenheim Hotel, Atlantic City, N. J., October 19, asserted that new methods of competition and persistent reiteration of the threadbare term "profiteer" had been a great hindrance to the merchant.

He warned accessory distributors that greater attention must be paid now to the percentage of profit than ever.

Other topics were "The Automotive Industry—Its Present and Future," by Alfred Reeves, general manager of the N. A. C. C.; discussion of the "Tire and Tube Situation," by D. T. Henne, Columbiana, Ohio; O. L. Weaver, Akron, Ohio, and F. I. Reynolds, Trenton, N. J.

Coming Events

SHOWS

November 15 to 20, 1920—Chicago, Ill. Annual Show Automotive Equipment Assn. Coliseum. A. B. Kauffman, Mgr.

November 15 to 20, 1920—Jersey City, N. J. First Hudson County Auto Show. Fourth Regiment Armory. Passenger Cars, Trucks, Accessories. Fred W. Payne, Mgr., Grand Central Palace, New York City.

November 18 to 27, 1920—Jacksonville, Fla. Fourth Annual State Fair and Exposition. Cars, Trucks, Tractors. B. K. Hanafourde, Sec'y.

November 20 to 28, 1920—Houston, Tex. Annual Automobile Show.

November 30 to December 3, 1920—St. Louis, Mo. Coliseum. Third Annual Exhibition of National Hardware Association of the United States. Accessories. T. James Fernley, Sec'y-Treas., 505 Arch St., Philadelphia, Pa.

December, 1920—Fayetteville, N. C. Second Annual Auto Show. Tobacco Warehouse. Passenger Cars, Trucks, Tractors and Accessories. Dan S. Hollenga, Box 465, Fayetteville, N. C., Mgr.

January 3 to 8, 1921—New York, N. Y. Truck Show of the Motor Truck Association of America. Twelfth Regiment Armory, Columbus Ave. at 62nd St. Trucks and Accessories. T. D. Pratt, General Manager, 1790 Broadway, New York.

January 8 to 15, 1921—New York City. Twenty-first National Show. S. A. Miles, Mgr., 366 Madison Ave., Grand Central Palace.

January 16 to 22, 1921—Schenectady, N. Y. Company E, F and Machine Gun Co., State Armory. J. J. Callahan, Mgr., Box 1186, Pittsfield, Mass.

January 17 to 22, 1921—Oklahoma City, Okla. Auditorium. Oklahoma City Motor Car Dealers' Association.

January 17 to 22, 1921—Lowell, Mass. Sixth Annual Auto Show, Kasino. Passenger Cars, Trucks and Accessories. Dan O'Dea, Mgr., 154 Moody St., Lowell, Mass.

January 17 to 23, 1921—Milwaukee, Wis. Thirteenth Annual Automobile Show. Auditorium, 102,000 Sq. Ft. Passenger Cars. Trucks and Accessories. Bart J. Ruddle, 316 Brumer Bldg., Milwaukee, Wis., Manager.

January 22 to 27, 1921—San Francisco, Cal. —2nd Annual Pacific Coast Automotive Equipment Exposition, Exposition Auditorium. Accessories and Equipment. Arthur Bryson, Director Publicity and Sales.

January 22 to 29, 1921—Montreal, Can. Annual Automobile Show. Montreal Automobile Trade Association. Motordrome Bldg.

January 23 to 29, 1921—Amsterdam, N. Y. State Armory. J. J. Callahan, Mgr., Box 1186, Pittsfield, Mass.

January, 1921—Spokane, Wash. Fourth Annual Auto Show (probable). Edgar M. Stock, Mgr., 822 Old National Bank Bldg. Passenger Cars, Trucks and Accessories.

January 30 to February 5, 1921—Hudson, N. Y. State Armory. J. J. Callahan, Mgr., Box 1186, Pittsfield, Mass.

February 5 to 12, 1921—Minneapolis, Minn. Winter Show. Walter R. Wilmot, Mgr., 709 Andrus Building.

February 7 to 12, 1921—Columbus, Ohio. National Tractor Show. State Fair Grounds. W. W. Whaley, Springfield, Ohio, Gen. Mgr.

February 12 to 19, 1921—Kansas City, Mo. Fourteenth Annual Auto Show. E. E. Peake, Mgr., 1019 Floyd Bldg. Passenger Cars, Trucks and Accessories.

February 12 to 19, 1921—Boston, Mass. Mechanics Bldg. and South Armory. Annual Automobile Show. Boston Automobile Dealers' Association.

February 13 to 19, 1921—Fitchburg, Mass. Automobile Show. State Armory. Benefit of Co. I and Co. K. William H. Partlan, Mgr. Box 1453. Pittsfield, Mass.

February 20 to 26, 1921—Pittsfield, Mass. Armory. Annual Automobile Show. J. J. Callahan, Box 1186, Pittsfield, Mass.

February 21 to 26, 1921—Grand Rapids, Mich. Twelfth Annual Automobile Show. Furniture Exhibition Building. Passenger Cars, Trucks, Tractors and Accessories. M. D. Elgin, Pantlind Hotel, Grand Rapids, Mich., Manager.

March 1 to 5, 1921—Quincy, Ill. Third Annual Auto Show. Armory. Auspices of Quincy Automobile Trades Association. Passenger Cars, Trucks and Accessories. J. W. Hart, Sec'y., Care Whig Journal, Quincy, Ill.

March 7 to 12. 1921 (Probable date)—Paterson, N. J. Fifth Annual Auto Show. Fifth Regiment Armory. Passenger Cars, Trucks, Tractors and Accessories. H. MacGinley, Paterson, N. J., Manager.

March 7 to 12, 1921—Indianapolis, Ind. Twenty-second Semi-Annual Show. John B. Orman, Mgr., 338 North Delaware Ave. Passenger Cars, Trucks, Accessories and Farm Lighting Outfits.

March 15, 1921—Fort Worth, Tex. Twenty-fourth Annual Southwestern Exposition & Fat Stock Show. Passenger Cars, Trucks, Tractors. M. Sansom, Jr., Sec'y.

March 20 to 26, 1921—Torrington, Conn. Company M, State Armory. J. J. Callahan, Mgr., Box 1186, Pittsfield, Mass.

March, 1921—Seattle, Wash. Third Annual Wm. J. Coyle, Mgr., 1321 Seneca St. Passenger Cars, Trucks and Accessories.

Date Undecided—Evansville, Ind. Eleventh Annual. J. F. Frohbieter, Sec'y., 130 First Ave. Passenger Cars, Trucks, Tractors and Accessories.

CONVENTIONS

Chicago, Ill., November 15 to 20, 1920—Automotive Equipment Assn. Coliseum. A. B. Kauffman, Mgr.

Chicago, Ill., January 31 to February 1, 1921—Annual Meeting N. A. D. A.

Chicago, Ill., February 2, 1921—Winter Meeting Society of Automotive Engineers, Hotel Morrison.

Cincinnati, Ohio., December 8 to 16, 1920—Convention and Accessory Exhibit. Ohio Automotive Trade Assn. E. J. Shover, Sec'y, 404 Central National Bank Bldg., Columbus, Ohio.

Columbia, S. C., December 9 to 10, 1920—Annual Meeting of the South Carolina Automobile Trade Association.

Detroit, Mich., November 18 and 19, 1920—Annual Meeting, National Association of Motor Truck Sales Managers.

Minneapolis, Minn., January 11 to 13, 1921—Annual Convention of the Minnesota Implement Dealers' Association, West Hotel. C. I. Buxton, Sec'y, Owatonna, Minn.

New York City, December 7 to 10, 1920—Annual Meeting, American Society of Mechanical Engineers. Engineering Societies Building.

New York, N. Y., January 4, 1921—Annual Meeting of Automotive Service Association of New York.

New York, January 11 to 13, 1921—Eleventh Annual, Society of Automotive Engineers, Hotel Astor.

New York City, January 11, 1921—Meeting of Eastern Automotive Equipment Association.

St. Louis, Mo., November 30 to December 3, 1920—Third Annual Meeting and Exhibition. Automobile Accessories Branch, National Hardware Association.

FOREIGN EVENTS

Buenos Aires, Argentina—November, December, 1920—National Exposition of United States Manufacturers.

Brussels, Belgium—December 10 to 19, 1920—First Post-War Show, Palais du Cinquantenaire, auspices Chambre Syndicate de l'Automobile.

Ceylon, India—January 22 to 29, 1921—Automobile Show, auspices Ceylon Motor Show Syndicate.

Sydney, Australia—January 7, 1921—Australian Motor Show.

Utrecht, Holland—Spring, 1921—Fifth Annual Industrial Fair, with International Exhibits.

Interesting Talk Given on Truck Selling

G. A. Gossette Speaks Before Automobile Trade Association of Kansas

Will G. Price, Ford distributor at Wichita, Kans., was re-elected president of the Automobile Trade Association of Kansas, at its fifth annual convention at Salina, October 19 and 20. Directors were elected as follows:

Louis McCoy, Garden City; L. W. Rowles, Topeka; A. E. Kirk, Hutchinson; A. E. Gise, Coffeyville; J. F. Olinger, Salina; Frank Slason. Plainville, and Martin Bunker, Wichita.

A. L. Oliger, of Topeka, was retained as secretary-manager and will be assisted during the coming year by a field secretary who will assist in organizing new local branches, etc.

The Salina program was one of the best the association has ever had. The National Automobile Dealers' Association sent A. R. Kroh and P. E. Chamberlain to participate and their addresses were heard by hundreds of Kansas dealers. Mr. Kroh's talk on "Motorization of the Farm" and on subjects just now engaging the attention of the industry, and Mr. Chamberlain's address on "Selling Service Intelligently," were of great value to those present.

One of the best truck selling talks ever given before a trade association was delivered by G. A. Gossette, of Wichita, who has the reputation of selling more trucks west of the Mississippi than any other man. This address will be reprinted in full in a future number of Commercial Car Journal.

The other features of the program were highly interesting and instructive.

The Kansas dealers adopted the standard association insignia which originated in California and which is now being almost universally used by state associations. Hutchinson was selected as the place for next year's convention.

California to Fight Legislation

That the automotive trade in California, as well as automobile owners, are getting ready to go to the mat with legislators who want to enact laws detrimental to the motor car in the Golden State is shown by news that comes from that section. An assessment of $1 per member has been levied against every member of the California Automobile Trade Assn., for use in this fight, and to this will be added a thousand dollars each from the Los Angeles and San Francisco dealers' organizations, and large sums from the various automobile clubs. The money will be handled by a committee from the various organizations contributing.

There are indications that the industry is to be attacked from all sides at the winter's session of the legislature, and the trade in the Golden State is going to be ready to meet every onslaught. Other states may well copy California's preparedness, for hardly a state in the union this winter will be free from anti-automobile legislation.

Bill for Heavy Motor Vehicle Tax Blocked

Excessive Tax Defeated in New Jersey House of Representatives

TRENTON, N. J., November 8.—Drastic legislation which meant increased tax of from 20 to 400 per cent on motor truck and passenger car fees in New Jersey was successfully combated today, when, after a hearing before the Judiciary Committee of the House of Representatives, Senate Bill No. 331 was defeated and a Senate Committee substitute bill calling for a 20 per cent increase tax was passed by the House at the afternoon session. This 20 per cent bill was agreeable to the dealers and car owners of the state.

The original bill, if passed, would have been particularly harmful to large capacity trucks, it being the contention of the proponents of the bill that since the heavy trucks did the most damage to the roads their owners should bear the brunt of the financial burden.

After the passage of the Bill No. 331 by the N. J. Senate, introduced by Senator C. D. White, September 8, 1920, automobile owners and dealers throughout the state awoke to a realization that the whole motor vehicle system was in danger. Led by the New Jersey Automotive Trade Association, the Motor Truck Club of New Jersey, the Associated Automobile Clubs of New Jersey and New Jersey Automobile and Motor Club, the facts were presented to the motor organizations throughout the state. Organizations employing truck fleets were likewise notified. A storm of protests followed, associations such as the New Jersey Lumber Exchange, the Central New Jersey Coal Exchange and the Millmen's Association of New Jersey pledged their help. Signatures of 20,000 owners and dealers were obtained to a petition protesting against the bill. The various city chambers of commerce took up the fight.

At the hearing before the Judiciary Committee of the House of Representatives, the opponents voiced their disapproval in no uncertain terms. Harry D. Meixell, of the N. A. C. C., representing the Motor Truck Club of New Jersey, made a convincing address, pointing out that the proposed revenue of $3,500,000 annually was more than enough to maintain the highways of the state. "Let the flow of motor truck vehicle transportation be retarded," he said, in calling attention to the dangers of the bill, "and the economic condition of the state will suffer." The car owners' situation was ably presented by Joseph Wood, of the Associated Automobile Clubs of New Jersey. Striking arguments were advanced by Wilkes McClane, of the Motor Truck Club of New Jersey, Edward Revine, of the Traffic Club of New Jersey, and William P. Bostwick, of the New Jersey Warehouse Association. Harvey Moore, secretary of the New Jersey Automobile Trade Association, acted as counsel for the automobile representatives. Leaders in the automotive world from the entire state were in attendance at the hearing.

Beneficial Trade Meeting at Gulfport

Shreveport, La., to be the Scene of the 1921 Convention

A general feeling of optimism regarding the future of the automobile trade permeated the fourth semi-annual convention of the Louisiana-Mississippi Automobile Trade Association held in Gulfport, Miss., October 6 and 7. The conventon regarded the present slump as being a good thing for business generally, as it will weed out incompetents. The meetings which were well attended, were beneficial in every way.

The prevention of a bill in the Louisiana legislature which would have put trucks off the roads and dealers out of business was reported as being one of the recent accomplishments of the Association.

Addresses of a high caliber were made by P. E. Chamberlain, of Denver, and A. R. Kroh, of the Goodyear Tire and Rubber Company. Mr Chamberlain spoke on "Improving Service and Selling it Intelligently", a subject which he handled in a masterful manner of great benefit to the dealer. Mr. Kroh spoke on the "Necessity of Motorizing the Farm" and incidently laid stress on the necessity of improving merchandizing methods to meet increasing competition.

At the banquet Wednesday evening October 6, C. A. Brownell, Advertising Manager of the Ford Company, was the speaker.

The convention decided to hold its new meeting at Shreveport, La., some time in March 1921. The exact date will be decided by the board of directors.

The election of officers resulted as follows: Pres. R. E. Hines, Jackson, Miss., 1st vice-pres.; Reuben H. Brown, Jeanerette, La., 2nd vice-pres.; J. K. Dunn, McCombe, Miss., 3rd vice-pres.; L. E. Barr, Lexington, Miss., 4th vice-pres.; W. G. Patterson, Shreveport, La., treas.; G. W. Reigger, New Orleans, La. To fill the vacancies caused by the expiration of terms and to replace those elected as officers taken from the previous board, the following directors were named by the convention: P. E. Baugh, E. H. Simpson, E. E. Cunningham, P. G. Moseley, Mr. Finley, F. F. Rankin, and W. H. Rodgers.

Standard Parts to Refinance

A plan to save the Standard Parts Co., of Cleveland, O., which includes a $11,500,000 proposed refinancing program, has been announced by the company's reorganization committee. Lifting the receivership under which the firm has been operating since September 1 and the meeting of current obligations are the immediate objects sought.

Under the plan, preferred and common shareholders are asked to subscribe for at least $4,000,000 new 8 per cent preferred stock, the remainder of the funds needed to be supplied by the Cleveland banks and investment houses.

Cleveland banks have offered to extend to the company $4,000,000 credit at a very attractive interest provided the stockholders do their share.

Ground Broken for Hudson Tunnel

Proposed Four-Driveway Bore World's Largest Subaqueous Structure

The $28.000,000 tunnel under the Hudson for vehicle transportation is to be a reality, ground having already been broken by Governor Edwards, of New Jersey, and Lieutenant Governor Walker, of New York.

The tunnel, with all the facilities of a city thoroughfare, will link closely the greatest steamship terminals in America, along the New York side of the Hudson with the immense railroad concentration centers in Jersey City. It is expected to quicken greatly the movement of incoming and outgoing freight via motor truck and to reduce food costs for New York's seven million odd.

The structure will be completed by 1924 and it is expected that 5,000,000 passages of motor trucks and horse-drawn vehicles will be made through the tube in its first year and that they will gradually increase.

Ventilation to rid the tunnel of carbon monoxide gases from automobile exhausts will be furnished by four large shafts and also by an air duct under the roadway and an exhaust above.

This great undertaking is primarily due to the motor truck, which speeded up transportation and caused people to see the appalling waste of time and money encountered waiting in line for a place on the ferries.

Traffic League Resists Car Spotting Charges

A recent bulletin sent out by J. S. Marvin, manager of the traffic department of the N. A. C. C., reads as follows:

1. At the National Industrial Traffic League October meeting a special committee was appointed to confer with carriers on defining and limiting the free placement of cars at factory sidings. In the form suggested by a committee of railroad traffic officials at the meeting this seems to contemplate extra charges on a considerable proportion of cars spotted.

2. Report of a special committee dealing with railroads on demurrage matters was adopted; it favors increased demurrage rates for a period of six months on the basis of $3.00 per day for the first 4 days after free time; $6.00 per day next 3 days and $10.00 for each succeeding day. Rules more favorable to shippers in a case of delay by strikes and bunching of cars in transit are contemplated; the league has joined the American Railroad Association in requesting the approval of the Interstate Commerce Commission.

3. A resolution was adopted opposing the compulsory use of the metric system of weights and measures.

4. The league favored direct dealing of employees with local labor adjustment boards of railway officials rather than through national boards.

5. The recently published statement that freight cars are in the hands of the public 37 per cent of the time was questioned by the president of the league in a letter to Daniel Willard, chairman advisory committee, Association of Railway Executives, who responded that the figures were compiled in 1913 and information as to what territory they covered, how many cars were involved or just how the data was arried at, was not available.

6. Thurston Ballard, lieutenant governor of Kentucky, declared that the development of this country had been due very largely to its extensive transportation system and low carrying costs heretofore prevailing; that highway development would proceed rapidly and freight up to a distance of 30 to 50 miles would be handled mostly on motor trucks.

7. Regarding claims more than two years old against the Adams Express Company, which is resisting certain rulings of the Interstate Commerce Commission in such matters, the attorney for the league stated there is some possibility of collecting, if amount of claims warrant suits.

Truck Trade to Receive Greater Attention

A. S. A. of Syracuse to Organize its Truck Men for the Coming Season

Paul Williams, service manager of the Franklin Automobile Company, Syracuse, N. Y., was the speaker of the evening at the monthly meeting of the Automotive Service Association of Syracuse, held on the second Thursday in October. He described the Franklin service policies, how the system operated, etc., and much of his address dealt with the daily problems of the service managers, members of the association. At the close of the meeting questions were answered by the speaker.

An interesting program is being arranged for the winter and will include talks by men prominent in the industry as well as those vitally interested in service. The program will be so arranged as to include subjects of interest to the motor truck service manager. Efforts is to be made to have meetings dealing with cost accounting systems, figuring overhead, handling labor problems, etc.

At the present time the membership is over the 40 mark and while largely passenger car service managers, a strong effort is to be made to increase the membership particularly the truck interests. It is said that the service managers of the truck dealers have not responded to the movement to organize the heads of the service departments and that it is believed that it is largely due to the feeling the truck men have that it is a passenger car organization. Those responsible for the formation of the association say that if the truck men will support the movement that they will be given equal representation in all matters and that effort will be made to arrange meetings at which truck service will be discussed.

An average load of 1.14 tons is hauled per truck daily between New York city and the mainland, according to the N. A. C. C.

Committee to Withdraw Tax Plan

Tax of 50c Per Horsepower and Gasoline 1c Per Gallon Not to be Passed

At a tax meeting before the National Industrial Conference Board, Oct. 22, 1920, presentation was made by the N. A. C. C. regarding the proposal of the tax committee of that conference to tax automobiles and trucks annually at 50 cents per hp. to raise $100,000,000 and gasoline 1 cent per gallon to raise $45,000,000 all in addition to present taxes on the automobile industry.

These proposals came as a part of the recommendations of the tax committee as a method of replacing loss of revenue which would be sustained by the elimination of the excess profits tax and the reduction of certain surtaxes on individual incomes.

After a meeting of the representatives of the Rubber Association, Motor and Accessory Manufacturers, National Automobile Dealers' Association and American Automobile Association, a presentation was made before the tax meeting at the Hotel Astor.

All the interested trade organizations were represented with the N. A. C. C. represented by C. C. Hanch, vice-president; H. H. Rice, J. S. Marvin and Alfred Reeves.

It was announced by the committee that the proposal to place a 50-cent per h.p. annual tax on automobiles and trucks in return for federal licenses and 1 cent per gallon on gasoline would be eliminated from its final report to the conference board.

Artists to Interpret Spirit of Transportation

Civilization has progressed only as methods and means of transportation have improved. Appreciating the contributions to transportation and world advancement made by the American automotive industry, the Clark Equipment Company of Buchanan, Michigan, manufacturers of Clark axles and disk steel wheels for motor trucks, have invited twelve of the most talented artists of America to dramaize, each in his own manner, "The Spirit of Transportation." These paintings, appropriately framed with individual lights, will be on exhibit as follows:

During the New York Automobile Show, January 8th to January 15th, the paintings will hang in the main lobby of the Hotel Commodore, Pershing Square. During the Chicago Automobile Show, January 29th to February 4th, the paintings will be on exhibit at Congress Hotel and Annex. During the Boston Automobile Show, March 12th to March 19th, the paintings will be on display on the main floor of the Copley-Plaza Hotel, in the corridor and lobby leading to the Gold State Suite.

A Jury of Award, consisting of the leaders of the automotive industry, will view the paintings, awarding to the winner the Eugene B. Clark capital prize of $1000; to the second choice a silver medal of honor, and to third honorable mention.

M. A. M. A. Sees Bright Future for Automotive Industry

At the regular monthly meeting in New York on October 15, 1920, of the Board of Directors of the Motor & Accessory Manufacturers' Association, representing approximately 360 makers of automotive units and equipment, President C. E. Thompson issued the following announcement:

We have absolute confidence in the fundamental soundness and stability of the automotive industry. A comprehensive survey of conditions throughout the country, and first-hand statements from various members of the association, indicate that there are now marked signs of improvement in the automobile field. The automobile industry has naturally been affected, as have other industries, by the economic readjustment of business conditions coming as an aftermath of the war. This process has been most orderly and constructive, and the basic strength and essential character of the automotive industry are beyond question.

The automotive industry is a transportation industry. The sound progressive development of the automotive industry is assured by the enormous transportation needs of this country.

The replacement business of motor vehicles looms up as a factor of paramount importance. This replacement business alone, even when coupled with only an average increase in the normal demand for new motor vehicles, is of sufficient size to keep the industry in a healthy and progressive condition.

Accessory Exhibit to be of Great Benefit to the Trade

The Automotive and Accessory Exhibit to be given in connection with the fourth annual convention of the Ohio Automotive Trade Association at Cincinnati, Dec. 7 to 10, inclusive, has every indication that an instructive and beneficial affair should result.

The exhibit is for educational purposes, affording every dealer an opportunity of seeing a general line of necessary equipment needed in an up-to-date garage or service station. The jobbing members are permitted to take space but may use them for visiting purposes only. The exhibits are made by the manufacturers of the product.

The exhibit committee feels that the exhibit and convention comes at a critical moment in the automotive industry when the influence for better business can be most appreciably driven home. The slogan "Let's go" typifies the spirit pushing the convention and is sure to make itself felt in many helpful ways.

The convention and exhibit will be held in the Music Hall, the Hotel Sinton, will be the general headquarters while the Hotel Gibson will be headquarters for the ladies.

X-Ray Better Accounting. The explanation of an accounting system which is devised especially for the automobile business, illustrating the forms and equipment that can be used. Prepared by the Lefebure Ledger Co., Cedar Rapids, Ia.

Atlas Reduces Prices

In announcing a reduction in price on the Atlas chassis, A. R. Cosgrove, vice-pres. and gen. mgr. of the Atlas Truck Corp., York, Pa., states: "The determination of a selling price is, or should be a simple mathematical computation of cost of labor and material plus a reasonable profit or return on the investment involved, and an examination of our accounts, which are open to any really interested parties, reveals the fact that our margin of profit is much lower than is ordinarily considered reasonable and that if eliminated entirely would not justify any reduction in price to the consumer.

"It is our desire to do our part in coping with the problem which confronts the industry, eliminating, if need be, all thought of immediate profits, and looking to the future to provide a just reward for our efforts. We have accordingly decided to eliminate our profit as a means of effecting an immediate reduction in our selling price to the consuming public and take this method of announcing that the list price of the Atlas chassis has been reduced to $1655, f.o.b. factory, York, Pa.

A. E. A. Ready for Big Meeting and Exhibit

Trucks will, undoubtedly, receive their just due of attention at the Fifth Annual Convention and second exhibit of the Automotive Equipment Association, Nov. 15 to 20, inclusive, at the Coliseum, 16th and Wabash Ave., Chicago. Indications at this moment point to the fact that the exhibit will far surpass that of last year. Scores of new accessory features will be shown for the first time.

A departure from previous A. E. A. convention routine is the separate meetings for jobbers and manufacturers. The latter will hold their sessions Wednesdays at 12.30 P. M., after the jobbers have taken their leave.

Trailer Association Getting Results

By the use of a permanent display exhibition of all makes of trailers in the International Tractor, Trailer and Farm Implement exchange of the Grand Central Palace, New York, the Trailer Manufacturers Association of America has been instrumental in awakening an active interest in the use of the trailer and thereby greatly increased trailers sales for its members in the past six months.

The association is in close co-operation with the N. A. C. C. the M. & A. M. A., the A. A. A., the N. A. D. A., the Rubber Association of America and the Federal Highway Council, in matters affecting the use of self-propelled vehicles on highways.

With these associations it has assisted in drafting proposed legislation for the greatest possible uniformity of motor vehicle laws throughout the country.

No Truck Show for A. D. A. of New York

A canvass of truck factories and New York dealers by the Automobile Dealers' Association, Inc., 1845 Broadway, New York City, revealed the fact that the association members were opposed to an A. D. A. truck show this season. The vote on the question stood yes 14 and no 67. In view of these replies the truck show committee has voted against an exhibit.

Titan Publishes Interesting Pamphlet

An attractive circular has been issued by the Titan Truck Co., 25th and St. Paul Ave., Milwaukee, Wis., showing how two 5-6 ton Titan trucks took the place of 14 teams and 11 men in the logging industry of Indiana. Logs totaling 16,650 lb. were hauled 32 miles in 3 hrs. 15 min. through mud hub deep. The pamphlet can be obtained from the Titan Co.

Officers and Directors of the National Automobile Chamber of Commerce for 1920

Standing: J. S. Marvin, Ass't General Manager; Alvan Macauley, Packard; Harry S. Jewett, Paige-Detroit; R. E. Olds, Reo; W. C. Sills, Chevrolet; J. E. Kepperly, Willys-Overland; Fred J. Haynes, Dodge Brothers; Alfred Reeves, General Manager; C. W. Churchill, Winton; J. Walter Drake, Hupp; S. A. Miles, Show Manager; William E. Metzger, Columbia. Seated: A. J. Brosseau, Mack, Secretary; Roy D. Chapin, Hudson, Vice-President; Charles Clifton, Pierce-Arrow, President; Windsor T. White, White, Vice-President; H. H. Rice, G. M. C., Treasurer.

NEW COMMERCIAL CARS

Moline Add Trucks to Power Farming Line

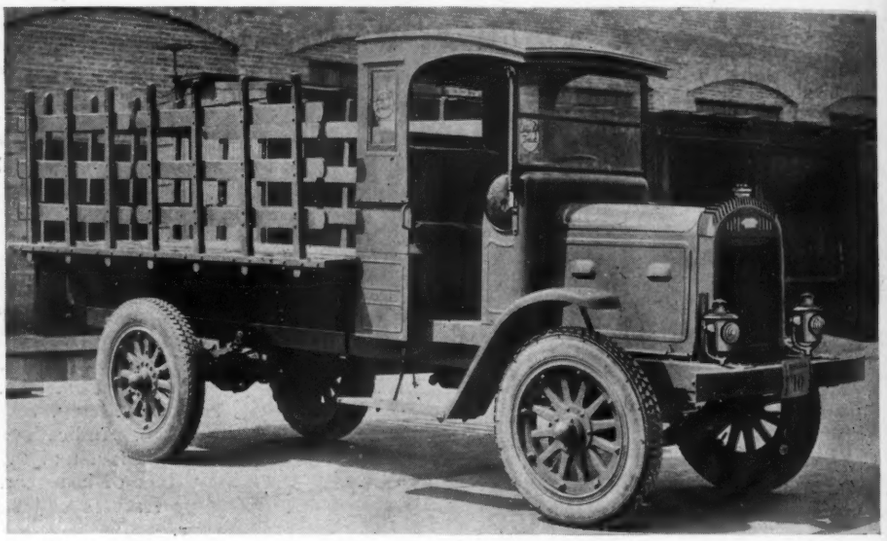
THE Moline Plow Co., Moline, Ill., announces that on October 1 it will start production on motor trucks in large quantities. The first to be offered will be known as Model 10, a 1½-ton truck. This truck was designed primarily to serve all the purposes of the farmer and will admirably round out with the tractor and other power farming implements of this company a farm power line that will extend to Moline dealers all the units necessary for motorizing the farm.

The experimental trucks that recently completed exhaustive test runs, the majority of which were staged throughout the southwest where they encountered almost every conceivable road condition, showed remarkable truck performance.

The Moline truck is powered by the well-known Moline engine similar to that used in the Moline Universal tractor. This engine is a valve-in-head type with large size bearings, force-feed lubrication and is said to possess an unusual amount of power for its size.

As this truck will be marketed to farmers through Moline implement and truck dealers, it has an unusually attractive feature in that the dealers who already have repair parts for this engine on hand, as well as service men who are familiar with every detail of its construction, can extend immediate service to the owners. An additional service advantage will accrue to the owner of both a Moline tractor and truck as all tractor and truck motor repairs are interchangeable.

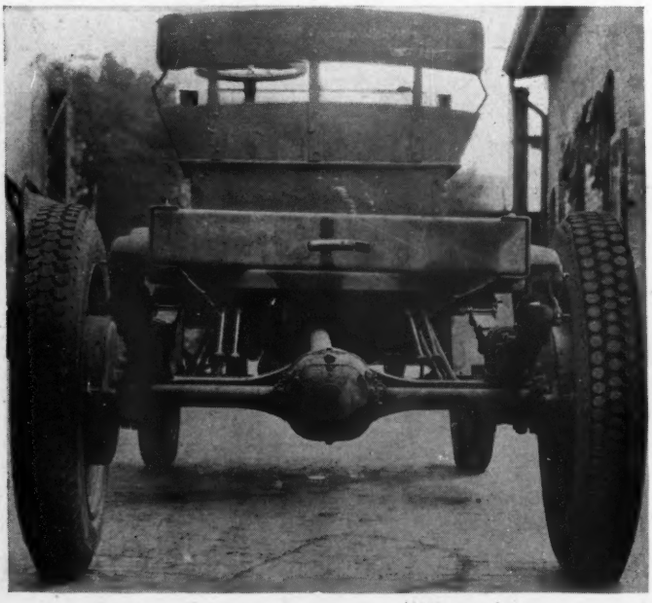
The specifications of the truck are of interest, as they show that it is of high quality throughout. Truck cord pneumatic tires are standard equipment. Chrome vanadium springs and nickel steel gears are used throughout, and drop-forged steel parts predominate in place of castings. The radiator has a demountable core which may be removed without disturbing the cast iron radiator tanks.



Moline Model 10, One and a Half Ton Farm Job Equipped With Stake Body and Pneumatics

There is also evidence in the design of attention to small details, such as automatic grease gun connections, with gun; a rugged and durable accelerator assembly; a self-aligning dry plate clutch; rubber bumpers, fan; force-feed lubricating system; 2-in. fan belt; strong pressed steel fenders; automatic mechanical type governor; durable three-piece pressed steel hood; powerful screw-type jack; high-tension magneto with automatic impulse starter; truck odometer driven direct from transmission and mounted to dash; tire carrier assembly applied to running-board; power-driven pump attached to transmission; tool kit containing heavy and practical tools; towing hook attached to frame. All of the above are included as standard equipment. Electric lights, generator and starter may be specified as extra equipment.

The design also provides for a power-take-off assembly as extra. It is so arranged that it can be set into operation from the driver's seat and started or stopped at will. A 12-in. pulley is regularly applied, or chain sprocket, if desired. A more detailed description of this truck will appear in a future issue of the COMMERCIAL CAR JOURNAL.



Rear of the New Moline Farm Chassis

Showing internal-gear, rear-axle, brake rods, Hotchkiss drive assembly, tow hook, giant pneumatic tires, etc.

Washington Waking to Truck Needs

Recent emergency performances of motor trucks in the state of Washington have visualized the important part the truck can take permanently in America's transportation system in this state. With the motor trucks playing an important part in the transportation system of Washington it is essentially necessary that better constructed highways be built and be maintained in a far better way than ever before. The hard-surfaced type of roads is a necessity for this state. Old road building methods are obsolete.

New 1921 Model Added to Commerce Line

THE Commerce Motor Car Co., Detroit, Mich., has recently announced an addition to their line of light motor trucks. It is known as Model T, and has a pay-load capacity of from 1500 to 2500 lb. and a maximum speed of 40 m.p.h. A general announcement of this new job was published in the October issue of the "Commercial Car Journal" therefore the following will be only a resume of the units incorporated and general construction.

The Commerce Motor Car Co. had suspended operation since July 1. The plant was closed when it became apparent that the credit restriction would react on the motor car industry. Since then the company has worked off its high priced inventory in the form of finished trucks with the result that it was able to announce this new post war speed model at lower than pre-war prices. It is pointed out that the factory is again running to capacity with orders on hand sufficient to maintain top speed production until after the first of the coming year.

A Continental, Red Seal, truck-type engine in unit with clutch and transmission furnishes the power. This four-cylinder engine has a bore and stroke of 3¾ x 5 in., respectively. Its crankshaft is carried on three main bearings. The force-feed and splash system of lubrication, which has a capacity of six quarts, is employed. Fuel is fed to the engine through a Zenith carburetor by the Stewart vacuum feed system from a 15-gal. welded gasoline tank located under the driver's seat. Air and throttle controls are mounted on the steering column. A foot accelerator is also provided. To create a more volatile mixture, a hot air connection through flexible metal tube from the exhaust manifold was decided upon and is being used. Ignition is through an Eisemann G-4 magneto. Other electrical equipment includes a Bijur electric starter and ball bearing generator, Willard 6-80 amp. hr. rubber threaded storage battery, armored cable, headlights with dimmers, electric tail light, ammeter and ignition switch mounted on dash, and starting button conveniently located.

From the engine, power is transmitted through a cone-type, 14-in. clutch, equipped with a special accessible lubrication cup for the thrust bearing, to a heavy-duty Detroit Gear transmission which provides three speeds forward and one in reverse. The shafts of this transmission are mounted on ball bearings throughout. The propeller shaft assembly includes a tubular propeller shaft of nickel steel and two universal joints of Spicer manufacture.

Final drive is through a Salisburg, bevel-gear, ¾ floating type rear-axle, having a final gear-reduction of 5 to 1. The shafts are of special chrome nickel steel, heat treated. The possibilities of ruptures and fractures are said to be avoided by the utilization of a seamless steel housing securely pressed on and riveted to the center.

Cooling fluid is circulated by the thermo-syphon cooling system. The radiator is a Commerce cast tank type having 4-gal. capacity, and a large filler opening. The tanks are finned cast, and the cores are removable.

The truck is controlled by internal expanding emergency brakes and external contracting service brakes which actuate on 16 in. drums mounted on the rear wheels. The wheels are of the heavy wooden artillery type, the front of which are mounted on roller bearings. The spokes are 1¾ in. square, numbering 12 in the front and 14 in the back. They are equipped with 34 x 4½ Goodyear non-skid pneumatic cord tires both front and rear. Demountable rims are used and a spare rim is included in the equipment.

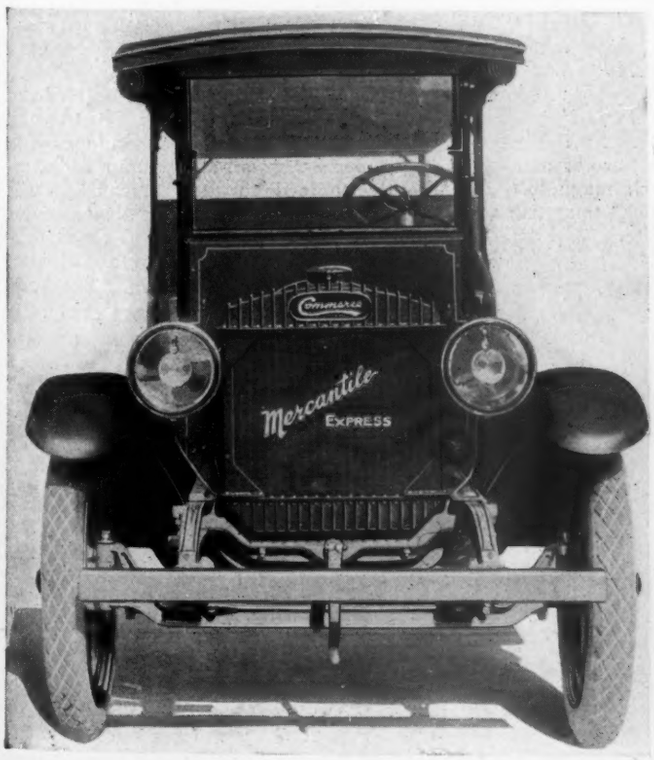
Steering is through a Jacox steering gear of the worm and split-nut type. The 18-in. steering wheel is mounted on a nickel-plated steering column.

The 4½-in. steel channel frame, reinforced by 4 cross members, is carried on 4 semi-elliptic, silico manganese, steel springs, manufactured by the Detroit Steel Products Co. The front springs are made up of 8 leaves, 36½ x 2½ in. and the rear springs of 10 leaves, 50 x 3 in. They are bronze bushed throughout and lubricated by oil cups.

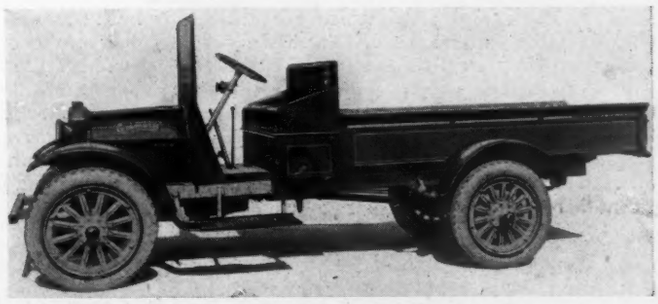
The wheelbase is 127 in. which provides a loading space of 110 in. from the rear of the driver's seat. The turning radius is 26 ft.

The standard equipment includes electric starter, electric lights, windshield, bumper, fenders, running board, sight-feed lubricator on dash, foot accelerator on rest, horn, tool kit, pump, jack, tire repair kit, and spare demountable rim.

The price is $1350 f.o.b. Detroit, Mich. With open cab-top it is $85 extra, or all-weather, Pullman type cab-top, $125 extra.



Front View of the New Model T Commerce Truck
It has a capacity of from 1500 to 2500 lb. and a maximum speed of 40 m.p.h.



Commerce, Model TA, Known as the Mercantile Express and Equipped With Flare-Boards
Body complete, $1450, f.o.b. factory

Commerce, Model TH, Mercantile Express With Canopy Top
Body complete, $1550 f.o.b. Detroit; wheelbase, 127 in.; loading space, 9 ft. 2 in.; width, 44 in.; depth, 12 in.; and clearance under top 56½ in. Storm curtains throughout

New Armleder Job Contains Drive-Taking Features

A NEW spring construction, combined with other features of design, standard parts and quality materials, characterize the new, heavy-duty service, one-ton, Armleder truck, recently introduced by the O. Armleder Co., Cincinnati, O.

The most important achievements along the line of improvement in this model are the construction of the springs and the parallel mounting of the radius rods with the propeller shaft. These features are said to greatly augment flexibility of chassis action. There are no spring shackles or shackle bolts to these springs. This construction is said to eliminate many wearing parts. These springs are 63½ in. long, which is approximately ten inches longer than those regularly employed; but owing to their special construction they shorten 18 in. under load, so that when the turck is empty the weight rests on the tips of the springs giving them the resiliency and flexibility of a passenger car. The same strength obtained from the use of short springs is asserted to be secured from the Armleder springs, as the weight rests nine inches lower from the tips of the springs when the truck is loaded. The spring leaves are made of triple heated Vanadium steel, and the machined pads between the springs and axles are set in lead, which not only makes them air and water-tight, but prevent them from loosening.

All end thrust is claimed to be removed from the propeller shaft by the radius rods, which are not only mounted parallel to but have exactly the same length as the propeller shaft. This design, it is pointed out, holds the rear wheels in perfect alignment with the front wheels and prevents pushing and pulling of the rear axle backward and forward and whipping of propeller shaft.

Another feature making for added endurance is the special mounting of the unit power plant, by which shocks ordinarily transmitted to the engine are absorbed by the special spring mounting of the complete power plant.

The power plant consists of a Buda, Model CTU, L-head type engine with a bore and stroke of 3¾ x 5¼ in., respectively, and a N. A. C. C. rating of 22.5 hp., a Fuller transmission, which provides three speeds forward and one reverse, and a Fuller dry-disk clutch. Fuel is fed by vacuum to a Zenith carburetor and ignition is through a Bosch magneto. The self starter, with which this truck is equipped, is a product of the Westinghouse Electric Mfg. Co.

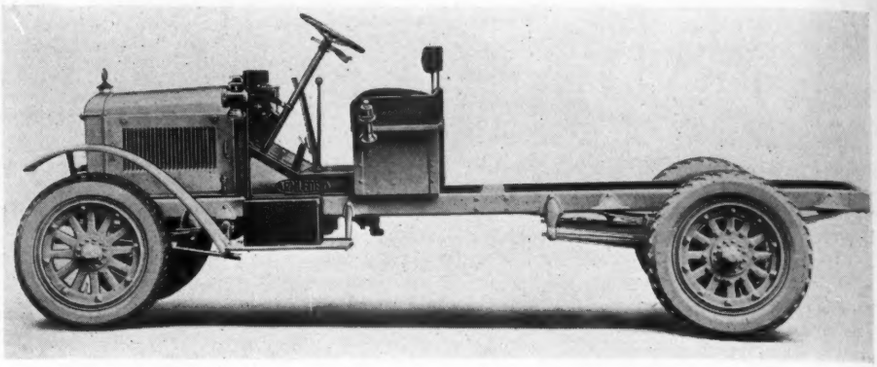
The cast-tank type radiator, which is Long make, has vertical seamless copper tubes, wound spirally with individual fins. The special spring mounting of the radiator prevents injury from shocks and the weave of the frame. The cooling fluid is circulated by a gear pump.

From the transmission the power is carried back through the propeller shaft, equipped with Spicer universal joints, to a Timken-Detroit, full-floating, worm-gear rear axle having a total gear reduction in high of 7.25:1 and a total gear reduction in low of 29:1.

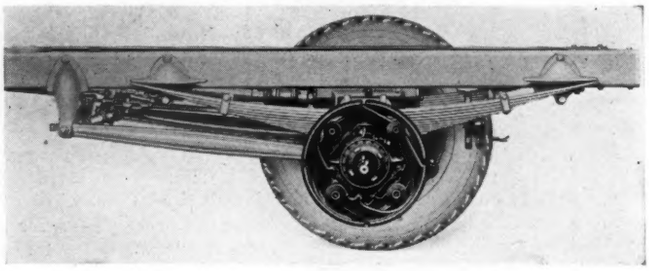
Steering is through a split nut and worm type, fore and aft and Ross steering gear.

The wood wheels are equipped with 34 x 3½, front, and 34 x 5, rear, pneumatic tires. The wheelbase is 148 in.

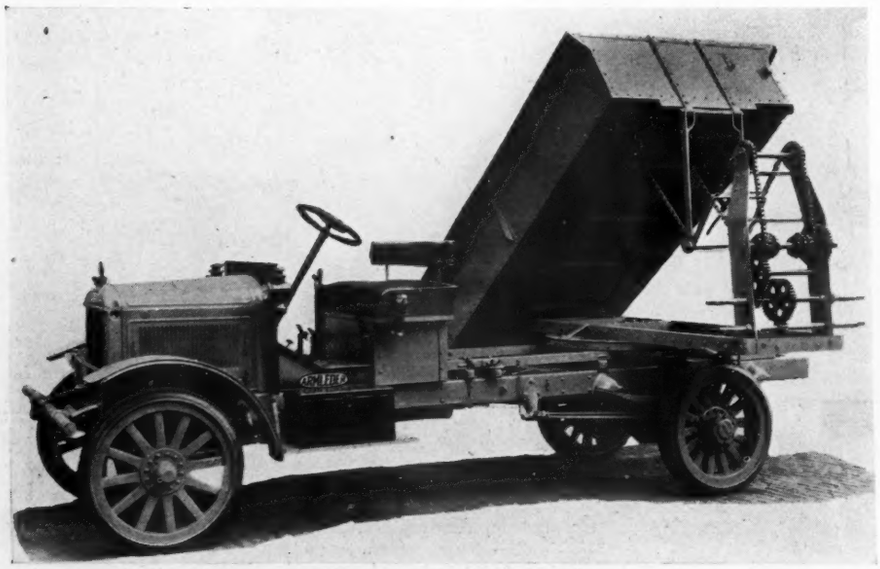
At this time mention may be made of one of the accompanying illustrations, showing an Armleder truck equipped with a Bruder 3-way all-steel dump body, recently shipped to the Duncan-Richards Co., distributors of the Armleder motor truck line, Memphis, Tenn. This particular job is to be employed by a coal company in the Memphis region. The body is opertaed manually and very easily. It can be dumped from the rear or turned to either the right or the left and then dumped. This optional position in dumping offers great advantages for the delivery of coal or other similar loose materials in narrow quarters or wherever it is found impossible to turn or back the truck into position.



Side View of the New Pneumatic-Equipped One-Ton Armleder Chassis
Note the radius rod; it is parallel with the propeller shaft



Close-up, Showing the Factors Making for Increased Spring Action



Equipped With a Bruder Three-Way Dump Body, This Armleder Can Dump Its Load Anywhere, Provided the Passageway is as Wide as the Truck's Tread

Truck to Assist Farmers

Plans are now being made to introduce the co-operative idea of motor truck transportation in western New York, according to a recent announcement of the N. A. C. C. The farm bureau managers of Chautauqua, Cattaraugus, Orleans and Niagara counties representing about 50,000 farmers, believe that several such lines will be in operation next spring.

Atlas Quick-Delivery Commercial Car

ONE of the most difficult transportation problems is that which confronts the great metropolitan newspapers. Winter and summer, regardless of weather, huge editions must be distributed througout the immense area. Speed is a prime requisite, for where the day's news is concerned every minute counts. In order to navigate crowded thoroughfares rapidly light trucks are essential; they alone afford the ease of operation and the ready control which ensure maximum speed. Yet, light though they are, these delivery trucks must have the rugged strength to carry full capacity-loads, day in and day out, on schedule time. In order to secure maximum efficiency in distribution, investigators found that they should be of about one-ton capacity.

The evening editions of the New York Herald, issued as the Evening Telegram, now are being distributed with the aid of a fleet of Atlas trucks operated by the Interborough Delivery Co. In the utilization of light delivery trucks the publishers believe that they have at last found the solution of their transportation problems

The Atlas truck is claimed to combine two apparently antagonistic qualities; strength and lightness. To achieve this result the Atlas Truck Corp., York, Pa., manufactures at its own plant every one of the principal parts contained in its truck, which is known as "Merchant's Dispatch," with the single exception of the engine.

Believing the worm-drive axle to be the type most in demand and most practical, the designers of this job set about producing a worm-drive truck at a reasonable cost. As the worm-drive axles on the market were considered too heavy to be suitable for use on its high-speed one-ton truck, manufacturers will develop their own type of axle. The design of this patented Atlas worm-drive axle aims to secure: strength in proportion to size; easy accessibility; minimized unsprung weight, and ease and economy of operation.

The Atlas axle is said to be the strongest unit of its size and weight on the market today. Lighter weight is said to have been obtained through the design of the pressed steel housing, and a double cantilever truss construction above and below the power transmission assembly. The gears and axle shafts have liberal dimensions. The worm and gear are asserted to be heavy enough for trucks of double the rated capacity, and the S. R. B. ball-bearings have equally generous proportions. Access to the working parts is had by simply removing the rear cover plate. It is not necessary to remove the body from the chassis, to use a chain hoist, or to disturb any adjustment whatever. The weight is said to have been reduced to a minimum without sacrificing strength, load capacity, or economy of power consumption. It is pointed out that because of this feature operating expense is materially lessened. It is a well-known fact that every pound of unsprung weight cuts down the pay load three to four pounds, with a corresponding increase in the cost of operation per ton-mile. By employing the ratio of six to one, it is possible to utilize the maximum power of the engine at average road speeds, to attain high road speeds easily

Rear End Top of Atlas Chassis

when desired, or to throttle down to low speed in traffic and make a quick getaway without needless shifting of gears.

The radiator is of original design, containing many refinements. The upper and lower tanks are made of drawn steel, which is lighter and stronger than cast iron, withstands extremes of temperature, and assists in cooling. The radiator is mounted rigidly on coil springs which absorb road shocks and strains without injury to the core. The core is honeycomb type, made of hard-drawn copper.

The Atlas C. A. S. steering gear is a miniature duplication of the U. S. army standard worm-and-gear type.

The engine is a Lycoming. The Atlas Corporation has developed a combined intake and exhaust manifold, which displays meritorious fuel economy, pick-up qualities and flexibility. On a recent road test, which included all sorts of road conditions and both hills and levels, the Atlas made and maintained an avergae of 21.6 mi. to one gallon of low-grade fuel.

The rear spring suspension of the Atlas chassis now employs the undersprung form of rear-shackle, lubricated by means of oil-cups instead of grease-cups.

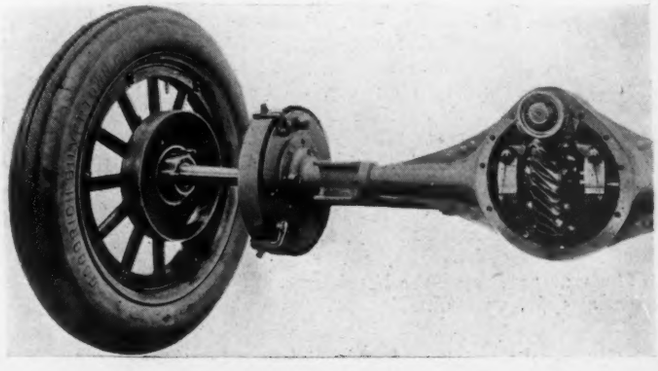
New Motor Claimed to Have Great Efficiency

The Sun Motors Corporation, Granite City, Ill., a $5,000,000 concern, has recently been organized to manufacture a new type of motor, which is quite a departure from the standard type of motor.

This motor is designed to utilize gas steam turbine principles and is claimed to be capable of going 40 miles on a gallon of gasoline and of giving 50% greater power efficiency than the present type of internal combusion engine.

By means of a specially designed steam chamber the motor converts the expansion forces of gasoline to its steam equivalent by the injection of water into the combustion or mixing chamber, at 212 degrees F. The valves open simultaneously, allowing both the exploded gas and steam to be discharged into a common chamber designed to combine the steam and the gas. This mixture is shot through a nozzle against the rotor blades of the turbine at 22,000 ft. per min.

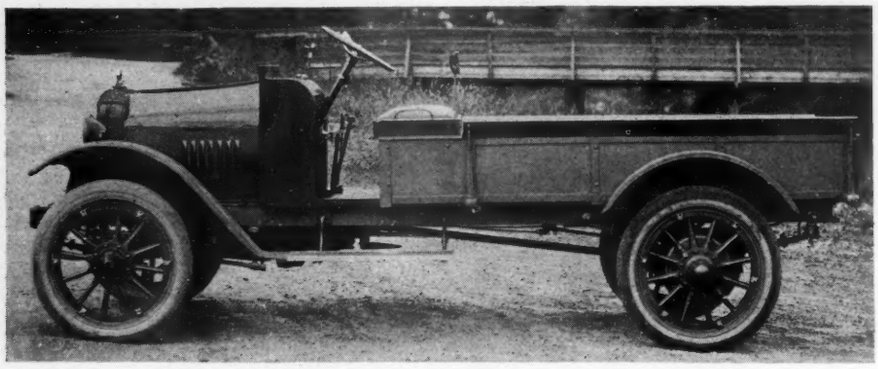
This action gives the motor a peripheral instead of impulsive power as produced by reciprocating motors.



Rear Axle View, Showing How Wheels May be Removed by Loosening Four Nuts.

Napoleon Speed Truck Assembled From Standard Units

THE Napoleon Motors Co., Traverse City, Mich., has recently introduced a new model, which is essentially an assembled proposition of standard units. It is known as the Napoleon speed truck, Model 7, which, although not having a definite rating, has a capacity of three quarters of a ton to one ton.



Model 7, Napoleon Speed Truck
It is made of standard units and is rated as a one-ton truck

This model is powered by a four-cylinder, detachable head, Herschell-Spillman engine of the L-head type, with bore and stroke of 3½ in. by 5 in., respectively, and is capable of developing 35 hp. The cylinders are cast in block with the upper half of the crankcase. Force-feed system of lubrication, to the main, crank and cam shaft bearings is employed. The oil is forced through this system by a submerged gear-type pump. The engine is suspended from three points.

Ignition and starting is through a Willard battery system with Gray & Davis generator, ignitor and starter. Gasoline is gravity-fed from a 12-gallon tank, located on the cowl, to a Zenith 1-in. carburetor, which can be controlled by a hand lever on the steering column or foot accelerator. The Thermo-siphon cooling system is employed, circulating the fluid through a Mercedes radiator. The honeycomb type of core is assembled in a cast radiator shell and protected by an army type of radiator guard. Air is drawn through the radiator by a four-blade 16-in. fan.

From the engine, the power is transmitted through a Borg & Beck 10-in. DX clutch to a Muncie selective, sliding type transmission, mounted in unit with the engine. This transmission provides three speeds forward and one reverse and has a gear ratio of 2:6 to 1 on low, 1.7 to 1 on intermediate, 1 to 1 on direct, and 3:4 to 1 on reverse.

The power is carried to the internal-gear type rear-axle by a 2-in. tubular drive shaft which is equipped with two Universal Machine Co.'s type 5-p. 40 joints.

The rear axle is of the bevel gear, differential type, with outside spur integral gears and gear rings. The pay load is carried upon a dead axle, which is equipped with Timken taper roller bearings throughout. The final gear reduction is 6 to 1.

The front axle is of the conventional I-beam section, with heat-treated load carrying member, hardened steering pins and knuckles, and Timken taper roller bearings in the hubs.

The frame is of rolled steel channel, 4-in. section, 34 in. wide and 14 ft. long. The front bumper member is integral with the frame. The frame is carried by four, semi-elliptic, alloy-steel springs, bronze-bushed throughout. The front springs consist of 9 three-eights plates, 2 in. wide and 35 in. long. The rear springs consist of 11 three eighths plates, 2¼ in. wide and 46 in. long.

Both service and emergency brakes are provided, one internal and one external, acting on a 14-in. drum, 2 in. wide, mounted on the rear wheels. The external brake is operated by the foot pedal and the internal brake is operated by the emergency brake lever.

The steering gear is of the split-nut type, mounted either right or left-hand, with outside spark and throttle control levers. Artillery type wheels, containing 14 hickory spokes, front and rear, are used. The front spokes are 1½ in. thick and the rear are 1¾ in. thick. These wheels are equipped with demountable rims and pneumatic tires, measuring 33 x 4 in. front and rear.

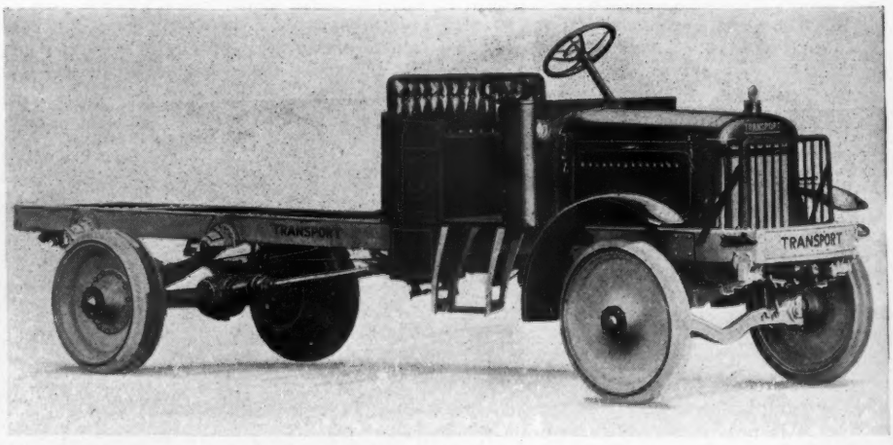
The wheelbase of this job is 121 in., with standard 56-in. tread; the chassis being so designed and built that it can be driven away as a unit, without having the standard type of seat riser and body.

The standard body equipment is the open express model, 6 ft. 10 in. behind the driver's seat and 42 in. wide, the loading height is 30 in. This body can be furnished as extra equipment with side stakes, windshield, or canopy top. The standard equipment is complete with tools, jack, pump and tire repair outfit.

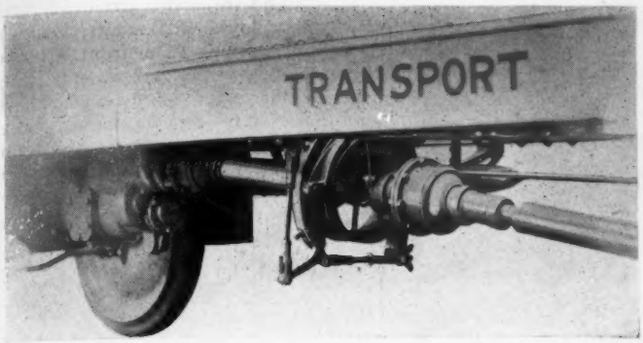
New Short Tread Transport Model for Congested Traffic

THE new member of the line of Transport trucks, Model 70, is now in production at the Mount Pleasant, Mich., factory of the Transport Truck Co. Like all Transport models its load rating is in pounds instead of tons—therefore this model goes into the transportation field for 7000 lb. loads. The Transport line now includes: Model 20, for 2000 lb. service; model 30, for 3000 lb. service; model 50, for 5000 lb. service, and model 70.

With the added power, size and strength providing an ample factor of safety for all lines of heavy duty service, this new model conforms to the established principles of construction laid down by this company. In its designing consideration was given to balance and coordination of parts making for a reduction of friction and perfect governing. It is featured by the new Transport oiling and Alemite lubrication systems. The company finding that the user was inter-



Many Points of Refinement Are Revealed in This Illustration of the Transport Truck, Especially Along Lines of Appearance, Disposition of Units and Special Equipment



The Double Action Service Brake is Mounted on the Propeller Shaft in Rear of Transmission.

ested in heavy-duty trucks with treads narrower than the standard, owing to the constantly increased use of trucks in traffic congestion and the pinches of alleys and terminals, has designed its new model with a 64-in. truck. This is nearly three inches shorter than the tread of the average truck of the same capacity.

Clark internal-gear rear-axles are used in all four models. For the model 70 it is of special design. Liberal use of nickel steel is not only made in this axle, but in rear-axle spindles, front-axle spindles, transmission shafts, drive shafts, jack-shafts, transmission-gears, differential gears, internal pinions, spring bolts, etc., as well.

The power plant is the new type of heavy-duty engine with standard No. 2 S. A. E. starting motor and generator flange. The exhaust and intake manifold are cast integral, pre-heating and drying the gas, thus assuring maximum mileage per gal. fuel. A Duplex engine governor is used on this as on previous models.

Beginning at the front, the heavy army type of radiator guard is noted. A folding starting crank is controlled by index plunger for holding the crank in its two positions. When not in use, the crank folds under so it cannot bump or catch on anything.

The depth of the frame, its extra bracing by cross members and gussets, and the Clark disk steel wheels with equipment of 10-in. Giant cushion tires, are points of strength.

Spring and shackle bolts are provided with large oil wells and wicks. The wicks by capillary attraction draw the oil the length of the bolt. With every movement of the springs the constant flow of oil is thoroughly spread over all the wearing surfaces. The overflow is distributed between the spring leaves. The old oil, grit and dirt are carried out and replaced by new, clean oil. One filling of oil wells of bolts lasts from ten days to two weeks. Alemite high pressure lubrication takes care of rear axle bearings, universal joints, wheel bearings, steering gear and is employed in this model.

A new drive shaft double action service brake is employed in this model. This type of service brake does away with the external contracting bands on the rear axle drums, and has many points of advantage in its positive and equal action, such as strength, simplicity, and accessibility. Adjustment and relining are easy matters.

This brake is mounted on the propeller shaft in rear of the transmission, at the intermediate bearing bracket. The location of this brake is an important point. It is well up in the clear, free from mud, dirt, grease and other injurious accumulations. Danger of freezing is entirely eliminated. From the brake arms two shoes, one on each side of the steel brake pulley, are toggled so as to give uniform contact at all points.

Gramm-Bernstein Adds a New Speed Truck

CONSIDERABLE interest is being shown by the trade generally in a recent announcement by the Gramm-Bernstein Motor Truck Co., Lima, O., of a new speed truck, for loads up to one ton.

Simplicity and accessibility of design is apparent throughout, which should contribute greatly to easy and prompt adjustment, the manufacturers at the same time claiming many other features, chief of which is that they have built along light truck, rather than passenger car lines.

An all-copper-and-brass radiator, protected by a cast semi-steel shell mounted on the frame with springs, is used instead of the conventional terne plate or galvanized radiator, rigidly mounted.

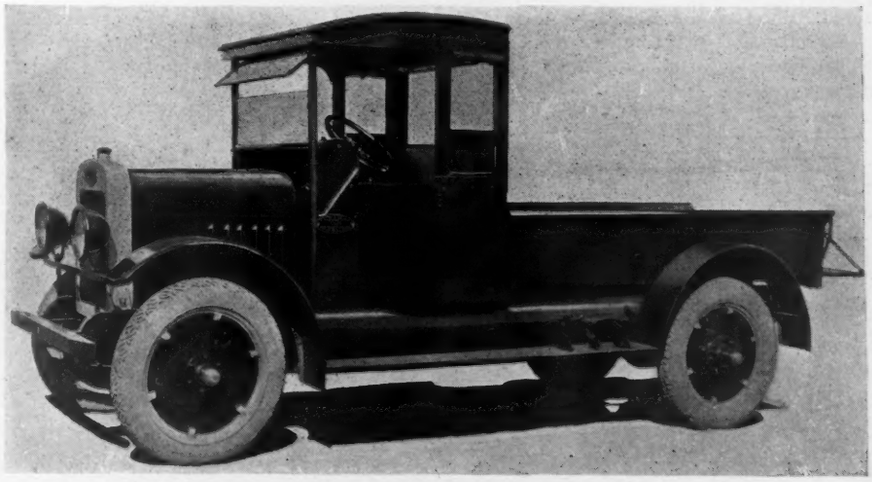
The power plant is a 3½ x 5 in. high-speed engine with removable head, hot spot manifold and stove on exhaust pipe for triple heating fuel and the manufacturers claim unusual efficiency and economy. One interesting feature of the engine is a construction which permits the valve tappet guides and tappets to be easily removed en bloc. The engine suspension is semi-flexible, three-point to main frame, with large trunioned support at front end.

A 10-in., ten-spline shaft dry-plate clutch is used, enclosed in unit with the engine. Transmission is sliding-gear type, three speeds forward and reverse, with nickel-steel shafts and ample gear faces, shafts being mounted on double-row annular ball bearings with additional roller bearings at the junction of the two sections of high-speed shaft. The propeller shaft is tubular, and the usual Gramm-Bernstein flexible oilless disk joints are used at both ends of the shaft.

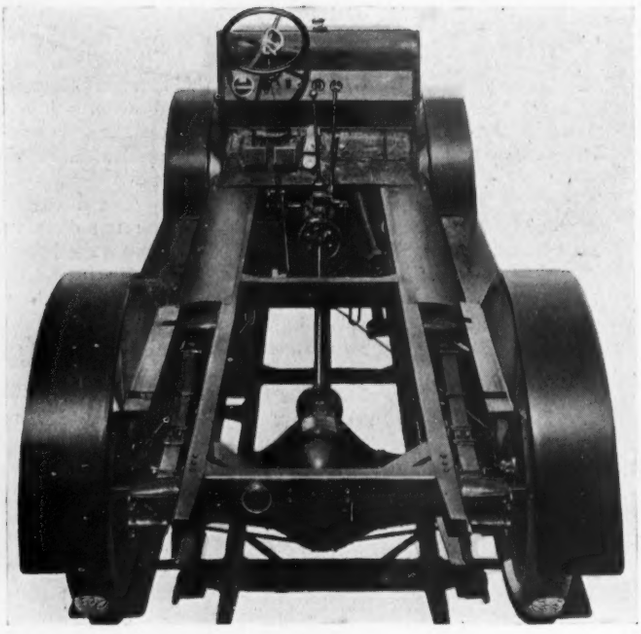
The rear axle is three-fourths floating, bevel type, gears being of helical spiral design, accurately cut and mounted on large annular bearings, the manufacturers claiming quiet as well as longevity in service. The housing is pressed steel with heavy drawn steel tubes and is further strengthened by a well-anchored truss rod underneath. The complete differential and carrier is easily removable as a unit. Drive bars are ample size, of chrome nickel steel, the wheel bearings being extra large double-row annular.

One especially interesting feature of this new model is the aeroplane type laminated wood disk wheels, 9-ply front and 11-ply rear, which are claimed to add to the appearance of the truck and to the life of the tires.

Particular attention is called to the springs and frame, the former being of extra length and quality and the latter being a straight section pressed steel channel construction. Following their usual practice, the front end spring hanger is a separate casting, this also providing for lamp and fender supports and anchorage for the bumper, which is channel steel. It is claimed for the frame and spring



Model 10, Gramm-Bernstein Speed Truck, Combination G-6
Chassis complete with cab, and special express flareboard body



Left: Rear Elevated View of the Gramm-Bernstein Job.

The chassis with 35 x 5 tires front and rear, electric lights and starter, speedometer, compression whistle, front and rear fenders with running boards and dust shields, bumper, jack, pump and full set of tools, front and rear license brackets, spare rim, etc., will be sold at $1495 and the truck is listed in 16 combinations of bodies and equipment, ranging up to $1780. The wheelbase is 128 in., loading space back of seat 8 ft., bed of bodies 34¾ in. from ground when empty, turning radius 20 ft., road clearance 10⅝ in., weight of chassis 2370 lb., body allowance 750 lb. Truck is capable of speed up to 45 m.p.h.

Right Detailed Front View. Observe the Equipment.

construction that the truck not only rides easier than most passenger cars but that it also holds the road much better than is possible with the usual light frame.

The service brake is 16 x 2 in. on rear wheels with a simple and positive cable and pulley equalizer. The emergency brake is a contracting band on the propeller shaft.

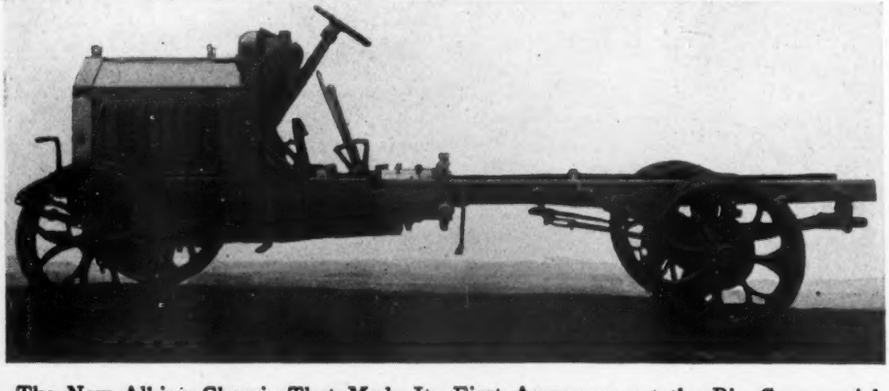
Ignition is Connecticut, with automatic circuit breaker to prevent battery exhaustion; water circulation is thermo-syphon, the large radiator insuring ample cooling; lubrication, combination force feed and splash; gasoline supply, 16½-gallon tank mounted in the dash, insuring strong gravity feed.

Springs are designed to carry flat under rated load and are fitted in each hanger with graphite impregnated oilless bronze bushings, requiring no further lubrication.

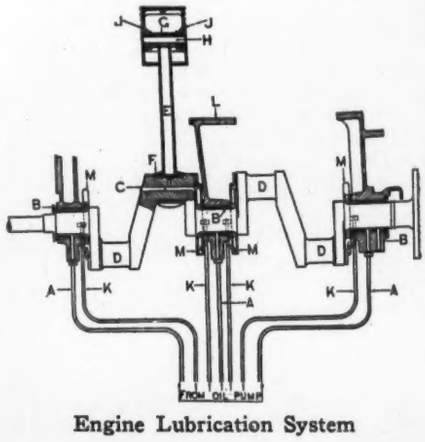
Scottish One and a Quarter Tonner, New British Delivery Van Design

THE first recognized successful British delivery van for loads of about 1¼ tons that has been rendering consistently efficient service emanated from the works of the Albion Motor Car Co., Scotstoun, near Glasgow, Scotland. During the war the other larger sized Albion trucks earned for themselves the reputation of being the cheapest in repair and maintenance of any truck constructed east of the Atlantic. In view of this reputation the new Albion model is especially worthy of study.

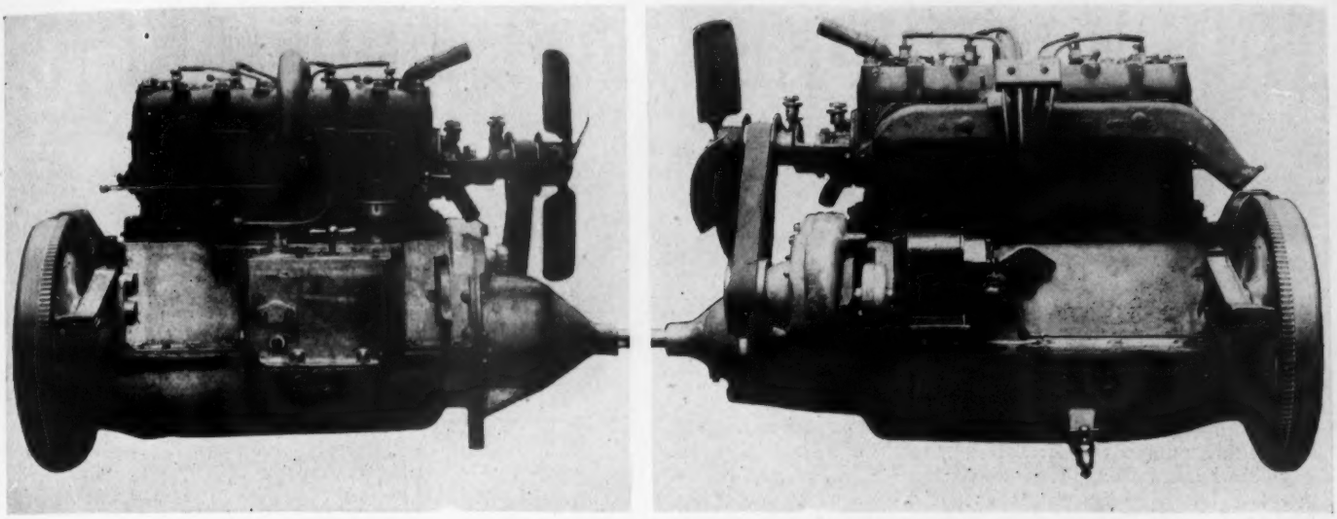
The new Albion 1¼ tonner is a 20 hp. three-speed machine having a live axle driven by a worm without radius or torque rods. Torsinal strains are taken up by a final drive of Hotchkiss design. A clear conception of the power-plant may be had by studying the accompanying illustrations. It shows the detachable cylinder heads of the 3½ x 5 in. engine, large inspection covers on the water-jackets, the method of valve tappet encasement on the left side and the toothed rack on the flywheel for engine starting. Visible, too, in both illustrations is the Murray patented combined radiator and water circulating pump, while the right-hand view also displays at the side of the crankcase the patented lubricator.



The New Albion Chassis That Made Its First Appearance at the Big Commercial Car Exhibition in London

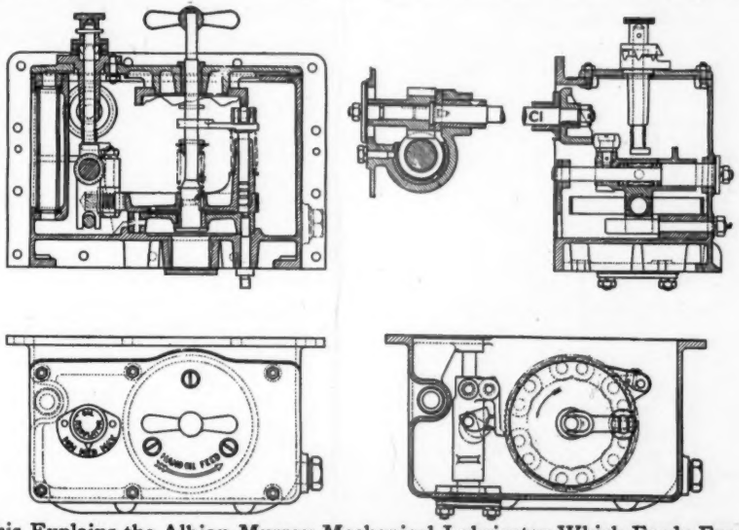


Engine Lubrication System



It is in the Albion Engine That Some of the Chief Features of the Scottish Model Are Embodied

The lubricating system is a most distinctive characteristic of Albion design. In the lubricator itself a plate carrying a plunger is slowly rotated by a ratchet operated through mechanism driven by skew-gear off the camshaft. As this plunger is carried round, a roller at its top end travels along a circular cam path, formed to give the plunger an up and down movement so timed on its downward stroke the lower end of the barrel in which it works registers with opening, whence oil can be delivered to the different parts of the engine. The system makes a great point of this. Oil is fed direct to each main bearing, to each cylinder, and to each big end, while additional feeds supply the timing and governor gears. The amount can be varied to requirements by an adjustment on the lubricator. Under this system no oil that has already been used is again circulated to bearings; the supply of fresh, clean oil can be positively delivered through each feed.



This Explains the Albion-Murray Mechanical Lubricator Which Feeds Fresh Oil to Engine Parts

At 1100 r.p.m. the four-cylinders collectively develop 23 hp. There is a single dry-plate clutch, with clutch brake to facilitate gear changing. The transmission is mounted slightly back of the engine by two supports on the chassis cross members. The shafts of the gearset are short, sturdy and run on ball bearings, and the main shaft at the back carries a locomotive contracting type of foot brake of a design typical of British practice. The unenclosed propeller shaft is equipped with universal joints at each end, encased in flexible metal covers. The back axle is a banjo forging of alloy steel, which carries the weight so that the axle shafts can be withdrawn without wheel removal. Finally, the wheels are of cast steel, carrying 90 x 720 mm. solid tires, though for special work pneumatics may be fitted. It is generally conceded, however, that the spring action of the truck is particularly good, even when full load is not carried.

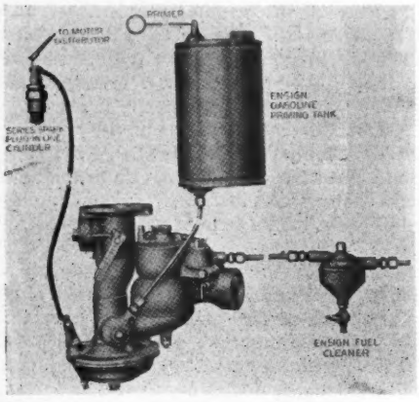
Gill Holds Annual Convention

From September 13 to 18, inclusive, the officials, branch managers, and representatives of the Gill Mfg. Co. were assembled in convention at the Gill plant in Chicago. Sales and advertising plans and policies for 1921 were discussed, formulated and adopted at this meeting. Much of the discussion centered around the subject of closer co-operation with the jobber; and plans, which will be of interest to all jobbers, were accepted. The report of the Sales Department showed that the sale of Gill one-piece piston rings had increased more than seven thousand nine hundred per cent over the gross business of its first year, 1916. The Canadian manufacturer of Gill rings reported a startling increase in demand and production; and the Automotive Products Corp., sole export agents, reported that Gill piston rings were now being used in every civilized country in the world.

TRUCK EQUIPMENT AND APPLIANCES

Ensign Converter, an All-Fuel Carburetor

A CARBURETOR that is especially adaptable to the operating requirements of trucks and tractors and that will use gasoline and kerosene tops or any water white fuel having a dry boiling point of 650°F, or less, is being offered to the trade by the Ensign Carburetor Co. Inc., Los Angeles, Cal. The following feature is accorded this carburetor because of its construction and the principles embodied in it: Perfect economical mixture produced from all fuels under variant atmospheric conditions and at all speeds or loads. The



Showing the Ensign Type N Fuel Converter With Installation Equipment

maker also points out that by using this carburetor all hot air and hot water equipment can be dispensed with.

The Ensign type "N" fuel converter primarily consists of three distinct elements, namely: a carburetor or metering system which produces a perfect ratio of fuel and air at all air velocities and temperatures; a gas producer which by preliminary partial combustion of some of the heavier bodies of the fuel converts them into hot distilled vapor and fixed gas; and a temperature regulator combined with a starting system which controls gas producer and affords a simple method of starting, even when cold.

The following is a comprehensive brief of the working principles and the operating functions of the various units contained in the Ensign carburetor. The mixing chamber indicated by "X" in the accompanying cross-sectional view, is built like a centrifugal pump, the suction from the engine causing the in rushing air to act as a pump impeller, it being instantly deflected into a whirling current centering about the fuel outlet "D".

By the well-known law of centrifugal force, the vortex caused by this whirling air applies suction, without air resistance, to the tube "I", this suction drawing the fuel through the fixed, submerged orifice "H", over the top of the tube "I" and out at "D" where it is thrown across the whirling current of air and violently broken up. This suction draws fuel in the exact amount that the air of varying weight needs to produce a perfect mixture ratio, as it is the drop in pressure at "D" which is caused by the centrifugal force of the whirling air, this force being proportional to the weight of the air.

With low grade fuels, the heavier bodies of it pass, in liquid form, through the fire screen "U" and then from around the edge of the distributor "C" into the combustion chamber "Q" of the gas producer where they are ignited by the spark supplied from the ignition apparatus, affording a hot, distilled vapor and fixed gas which is converted into a fog when passing from the top of the flue "Z" and coming in contact with the cooler vapors. The partial combustion of this fuel is supported and controlled by the air entering "Q" through the by-pass "V" from the mixture passage "L". It is also controlled by the suction through the gas flue "Z" which is in turn controlled, at idling speeds, by the thermostat "N" causing the plug "M" to regulate the opening at "O". When the throttle is open this suction is limited by the area of the flue "Z" and the character of the fuel.

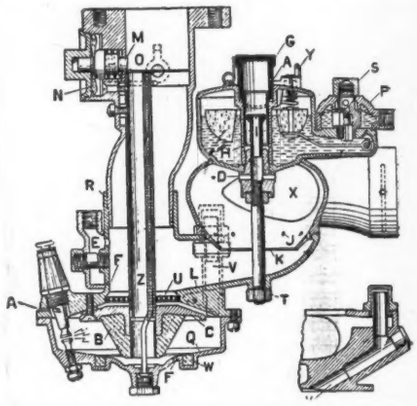
The heat generated by this gas producer, being controlled by the correct proportioning of its own parts and the thermostat, is delivered from the walls of "Z" and "L" to the mixture—always in the correct amount to effect perfect vaporization of the lighter bodies of the fuel, permitting a uniform mixture to be delivered to the cylinders. This preliminary partial combustion of the heavier bodies of the fuel adds just enough inert gas to check so-called pre-ignition usually experienced with low grade fuels, and prevents these heavier bodies from getting into the crank case in liquid form, thinning the lubricating oil with consequent damage to the cylinder walls and crank bearings.

Ignition is supplied by substituting a series spark plug in place of the standard plug of one cylinder, connecting one terminal of the series plug to the distributor and the other terminal to that of the converter spark plug, or by using a distributer with double the number of terminals, connecting the extra terminals in series with the converter spark plug, or by special magneto having extra high tension connection, or by the use of a separate coil and interrupter where make and break ignition is used.

A gasoline prime for starting is conveniently supplied at "E" from a small priming tank and controlled by an automatically closing valve.

The typical installation equipment shown consists of an automatic priming tank containing a self-closing valve, fuel cleaner and series spark plug. Any satisfactory series spark plug will do, or a distributor with twice the number of terminals may be used by connecting the extra terminals in series to the converter spark plug.

The Ensign converter is made in five sizes varying from 1⅛ in. to 2 in. inclusive and lists according to size from



Cross-Section of the Ensign All-Fuel Carburetor. Fuel Passage Indicated by Symbols in Article

$50 to $80. The following are prices of extra equipment: Priming tank, $5; fuel cleaner, $3, and series spark plug, $3.

International Electric Glue Heaters

The International electric glue heaters are made of heavy spun copper, without seams or soldered joints. They are designed to operate on dry heat without the use of water, and are built in sizes which make them adaptable to the requirements of all classes of shops, large or small.

By the use of this heater the cost of maintaining glue at the correct temperature is reduced to a minimum. Uniform temperature is maintained at all times and under all conditions.

Evaporation of moisture and glue is avoided by means of a deflector type cover, making it unnecessary to add water for thinning the glue. This feature also prevents the forming of skin, scum or dirt on the glue.

This heater affords three distinct degrees of heat, full, medium and low. The current is controlled by a three-heat dirt and moisture-proof rotary snap switch

Electric Glue Heater
Designed to operate on dry heat and to maintain a uniform temparature

which clearly indicates the various temperatures. The heating element is made of high-grade patented nickel chromium alloy wire, and is wound directly on to the inside surface of the same. This method of applying the heat insures even distribution and rapid melting, without danger of burning the glue. The space between the heating element and the outside jacket is filled with a special insulating and heat-retaining substance which holds the glue at a good working temperature long after the current is turned off. This principle of construction reduces operating expenses to a minimum since all the heat generated is utilized and none wasted through radiation. The one-quart size consumes only 50 watts on medium or working heat. It is produced in 1-pt., 1-qt., 2-qt., 4-qt., 8-qt., 5-gal., 10-gal. sizes. It is made by the International Electric Co., Indianapolis, Ind.

The Trex Hydraulic Jack

The Trex jack, a product of the Trexler Co., 1418 Walnut St., Phila., Pa., is built on the hydraulic principle. It is a compact jack employing oil in its hydraulic operation. This jack is claimed to raise and lower a truck with speed, safety and convenience.

The materials used in its construction are of good quality. Brass and steel are used throughout.

To raise a truck place jack under the spring or axle, render a few up and down strokes by the handle, which action pumps the oil from the reservoir to the pressure cylinder, until the required height is reached. The jack automatically checks itself when the car is at the required height. To lower the truck no jacking is necessary. The handle is merely pushed down and the car does the rest. Style No. 2 is designed especially for all 3 and 5-ton trucks.

The Trex Hydraulic Jack

New Device to Test Solution of Radiator

The Beckley-Ralston Co., 1801 S. Michigan Ave., Chicago, Ill., is announcing a new instrument for testing radiator mixture to determine its exact freezing point. It is known as the Radiatometer and resembles and works on exactly the same principle as the Master hydrometer, also made by this company.

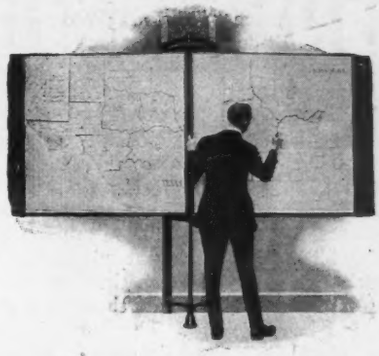
The long, flexible rubber tube of this meter is submerged in the liquid and the pressure, which was exerted on the bulb, is then removed, this action draws the solution up and into the glass tube floating the graduated float from which can be determined the strength of the solution. At each end of the float is a celluloid ring that holds the float in the proper position in the barrel at all times, preventing the tip of the float from sticking in the barrel. This device includes a rubber bulb and an extra heavy glass barrel with rubber rings at each end of the barrel to protect it from breaking. The list price complete is $2.

Beckley - Ralston Radiatometer, a Solution Tester for the Radiator.

Multi-Unit Map System

The Multi-Unit map system is a modern practical equipment substituting the tedious and unsatisfactory use of just standard national maps. For the business man who seeks the best aids toward keeping apace with the daily strides of business, these maps are almost indispensable. They show the townships of every state in the Union, this being the outstanding feature. They are fully indexed.

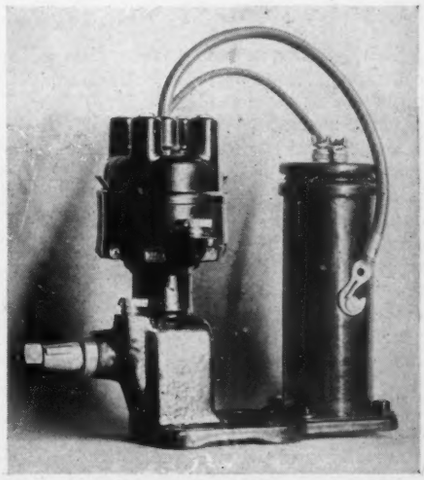
To make them convenient and easily accessible, the fixtures, which hold the maps, were designed to facilitate quick reference and conserve occupational space. These fixtures include a single unit, four unit, seven unit and twenty unit wing pivot wall fixture, the latter covering the entire 48 states, mounted on 40 surfaces of 20 wings, and having over 600 sq. ft. of display surface. This map requires but from 60 to 48 in. of wall space. The pivot fixture permits all of the twenty wings to be swung to either side, and allows an angle of over 45 degrees while referring to maps. In case it is not desired to attach a fixture to the wall the self-supportable floor canopy fixture can be used. This fixture can be had with or without the canopy. The canopy, however, which is large enough to cover the wings when spread at an angle, serves as a dust protection. It is also wired for electric lighting. The celluloid finish is a smooth, transparent; water-proof coating applied to the surface of the maps. When so treated maps can be used like a slate. The surface may be marked, with water colors, inks, crayons or pencil, and it is always legible and easily removed, when desired, by a moist sponge or cloth. They are manufactured by the National Maps Company, Indianapolis, Ind.



The Multi-Unit Map System
Townships in every state in the Union are shown. These maps are conveniently held in fixtures

Westinghouse Magneto Replacement Outfit

The latest addition to the line of the Westinghouse Electric & Mfg. Co., 165 Broadway, New York City, is the magneto replacement outfit. It is a simply



New Westinghouse Ignition Unit

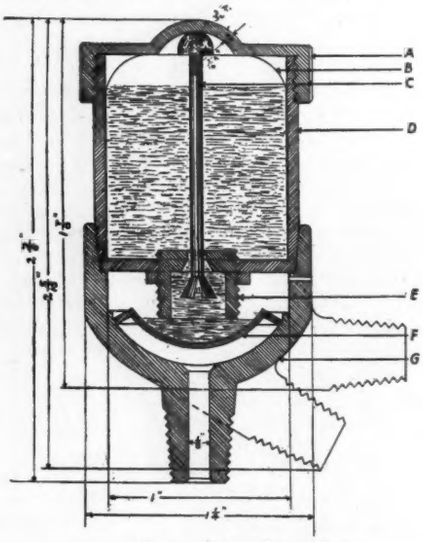
constructed unit that can be easily substituted in place of the magneto without the need of additional parts.

The standard Westinghouse ignition head is incorporated in it. The dimensions are S. A. E. standard and the cam is constructed of self-lubricating, durable material. The condenser is claimed to be practically indestructible under service conditions and the breaker contacts have been tested to operate 10,000 miles under normal conditions without adjustment.

Connection is made to the distributor head from the drive shaft through a pinion and beveled gear. The ignition head is mounted on a rugged base of the same dimensions as the magneto base and is secured to the bracket by four screws corresponding to the magneto support. Hence the entire process of magneto replacement with this device consists in unscrewing the magneto from its supports, placing the outfit in position, resetting the screws and coupling, making connections and timing.

Vanoiler Oil-Cup

The Advanced Products Corp., 1711 Vine St., Phila., sells a device known as the Vanoiler for chassis lubrication.

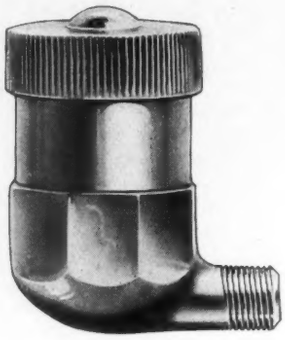


Drawing of the Vanoiler

This oiler maintains a constant level in the pan F, which level is adjustable by the bushing E. When the cap is removed for filling the bearing will not be flooded, although it can be by depressing the plunger rod C.

Briefly, this new device consists of an oil cup, connections for attachment at any point on the chassis to be lubricated and an oil reservoir which maintains constant level in the splash pen, from which, by vibrational action, oil is fed to the parts to be lubricated. The constant level being adjustable, the amount of oil fed to the bearings is easily regulated. The bearing can be flooded at any time and if this operation empties the oil chamber it can be refilled, as its construction affords ready access.

The maker states that with this device it is possible to maintain a continuous film of oil between the wearing parts, because this device supplies lubrication economically and in the quantities needed. Oil of practically any viscosity can be used in this unit.



Vanoiler
A completely enclosed oil cup

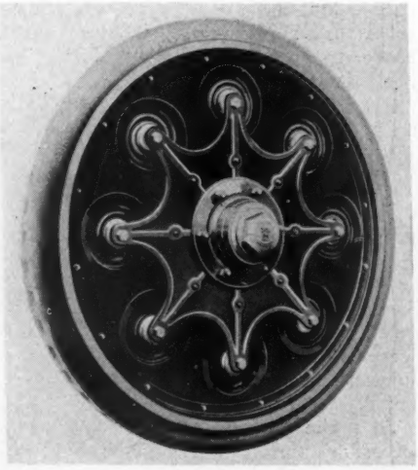
Referring to the accompanying drawing of the sectional view, when the cap A is screwed down on the cup D it presses spring B, releasing valve C and starts the flow of oil to the pan, F. It will fill the pan up to the level according to the adjustment of E, when a seal is formed and no more oil from the cup, D, will pass to the pan, F, until movement of the car has splashed oil to the bearings. This product is an invention of A. A. Van Orsdale, who is president of the Advanced Products Corp.

Robertson Resilient Wheel

A new wheel, known as the Robertson parallel suspension wheel, made by the Robertson Resilient Wheel Corp, 53 W. Jackson Blvd., Chicago, which has spent considerable time in developing and testing it, was recently introduced to trade.

On this wheel use is made of a series of pockets or housings for the retention of spiral springs faced with rubber cushions. These cushions, which are circular and conform to the spiral of the spring's form, have been vulcanized to a brass or malleable iron core and used as dampers to prevent convulsive vibration of springs.

This wheel is made up of two spiders or plates, rigidly attached to the hub and attached to the cushioning elements, the spring and rubber, by bolts passing through the bushings of the rubber cushions and spiral springs. It is claimed in this construction equal distribution and parallel suspension of the load remote from the center of the wheel is obtained, thus taking the vertical and tangential stresses. Lateral thrust is restricted by two fibre washers between the spider plates and the cushioning element.



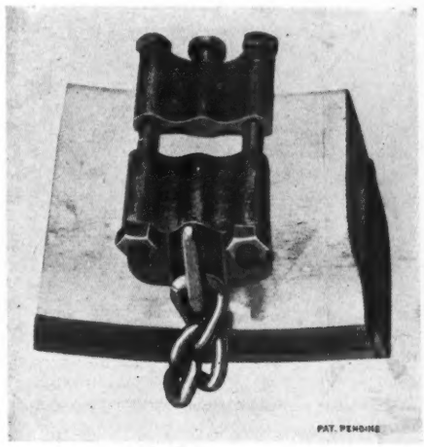
Robertson Resilient Wheel

The force of momentum has an important function in that when the rim meets an obstruction, the momentum carries the centers over this obstruction while the rim follows, which is stated to produce a neutralizing reaction, which is not the case with a rigid wheel.

The spider plates have a peculiar form, the inward curve being made to register with the pockets of the springs so that by removing all the bolts and turning the spider curves to register with the pockets, a faulty spring can be removed and replaced without disassembling the wheel. These wheels weigh approximately twice that of standard equipment, yet the inventor states that tests have proven that a car maintains traction better, gathers speed as quickly, and stopped as quickly.

Viktry Split-Saddle Traction Grip

The Viktry is an adjustable, split-saddle traction grip, manufactured by the Viktry Mfg. Co., Milwaukee, Wis. Its construction allows it to be fitted to any wooden felloe. The clamp is so designed and made as to place the strain on the upper spoke surface of the felloe, instead of both sides of it. The button pin operates in hard oil, which prevents corrosion, rust and entrance of grit. Oil is applied through a small hole at the foot of the button pin.



Viktry Traction Grip
It is self-adjusting and fits to any wooden felloe

This grip is locked in position by a simple, reliable locking device. By simply pushing back the button, hooking on the chain end, and allowing the button to spring back into place against the hook, the chain is fastened on the clamp with little possible chance of the chain coming off. The locking button pin is turned out of steel and has a hollow center to accommodate the spiral spring which holds it in the locked position against the hook. The Viktry uses any size of case-hardened tire chain and it requires no special links. Any link on the chain serves on the locking end as well as the other end.

Globe Super Two-Stage Compressors

The outstanding feature of the Globe super two-stage compressor manufactured by the Glibe Manufacturing Company, Battle Creek, Mich., is that it is a two-stage compressor, having bu a single light weight piston, one cylinder, one connecting rod and no stuffing boxes. The reciprocating parts are no heavier than the corresponding parts of a single-stage compressor of the same dimensions. This feature permits the super two-stage to be driven at a speed as high as is possible with any single-stage compressor of equal dimensions. Increased efficiency and greater displacement results from the higher speed at which it may be driven.

The accompanying mechanical drawing shows the general design of the Globe compressor, also, to quite an extent, the details of construction, and the principal specifications of a 4x4 compressor of this type.

With the exception of the flywheel, every moving part is entirely enclosed and protected against dirt and against damage from any external source. There are no nuts, screws or other detachable parts which can possibly work loose in the internal mechanism.

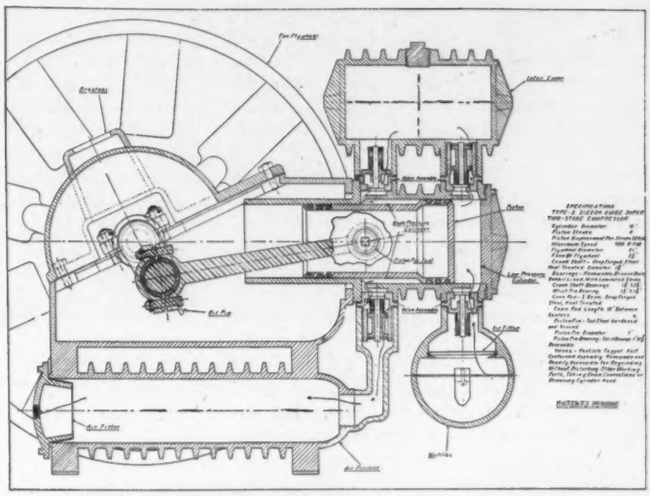
The entire top of the crank case is removable, affording access to any part; the line of separation being in line with the center of the crank shaft bearings. The renewable, bronze-back, babbit-lined, laminated-shim bearings, being entirely self-contained, are not in the least disturbed by removal of the crank case cover. Standardization of all parts permit the obtaining of any unit for renewals.

Vertical tappet valves are used throughout. All of the parts of each valve are arranged in a complete self-contained assembly so that all wear is confined to the assembly itself. The complete valve assemblies may be removed for regrinding or replacement without disturbing any of the other working parts of the compressor.

Lubricating is secured through a specially controlled splash system. An ample supply of lubricant is provided for every part requiring lubrication. Two pints of good engine oil and the addition of one pint every three months is stated to be sufficient for a 4x4 compressor operating continuously ten hours a day. Oil level can be determined at any time from an oil gage provided in reservoir.

The fly wheel is provided with nine fan blades, so arranged that when the compressor is in operation the entire machine is constantly bathed in a strong current of air.

The following is an explanation of the mechanical operation: The muffler, which is attached to the intake valve, is provided with an air filter which cleans the air before it enters the low pressure cylinder. From this cylinder the air is then forced through a flanged inter-collar into the high pressure cylinder, producing the first stage compression, which does not exceed 55 lb. The second stage or final compression is produced by the return stroke of piston, which forces the air from the high pressure cylinder into a storage tank. The air first passes through a flanged condensing chamber, or purifier, beneath the crank case, where it is freed from moisture and any traces of oil, insuring a supply of purified air, free from dust, oil, surplus moisture or any other contamination.



Mechanical View of the Globe Compressor
Also general specifications and dimensions

These compressors, whether for individual motor drive, or driven from a power shaft, are equipped with the latest type Globe automatic pressure unloaders, which serve a double purpose. The compressor, when starting, comes up to speed before compression begins which prevents the blowing of fuses or burning of motors, and the throwing or burning of belts. Each time the compressor stops, the moisture condensing chamber is automatically drained through the pressure release valve of unloader, making it entirely unnecessary to drain this chamber by opening a hard drain cock.

Globe super two-stage compressors are, at present, built in three sizes ranging in capacity or actual piston displacement from three to twenty-five cubic feet of free air per minute.

The different sizes are furnished in various equipments, from the bare compressor to complete automatic motor drive units, all designed especially for inflating giant pneumatic tires, or any other service within the limits of their capacity and requiring pressure up to 350 pounds to the sq. in.

This New Globe Super Two-Stage Compressor.
Has but a single piston, one cylinder, one connecting rod and no stuffing boxes.

H. S. Engine Stand

A stand that will receive any size or type of engine is the new product of the Portable Tool Supply Co., Buffalo, N. Y. The revolving and adjustable features of this device afford ready access to any part of the engine being supported by it.

Right and left-hand slotted brackets, bolted on two revolving rings, one on each side of the stand, support side angle arms upon which the complete engine or engine base may be bolted or clamped and then revolved and secured at any angle for assembly or repair. By turning the brackets inward the side arms may be spaced as closely as 8 in. or moved outward to the extreme width of the revolving rings. This range accommodates practically all types of automobile engines. For engines of greater base width up to 34 in. it is necessary to reverse these brackets so that they project beyond the revolving rings. The user may substitute side angle irons of any required length for unusual jobs.

This stand is regularly built in the following lengths: 54, 62, or 79 in., but may be built in any length to meet conditions.

Mead-Morrison Underslung Friction Drum Winch

Mead-Morrison Mfg. Co., East Boston, Mass., has recently perfected a new cable pulling apparatus, which is particularly valuable to telephone companies. This equipment, which is a decided improvement over anything previously used in cable pulling service, takes the form of an underslung winch, attachable to the rear, underside of the frame of any size truck. A feature of this location is that the winch occupies none of the valuable loading space of the truck.

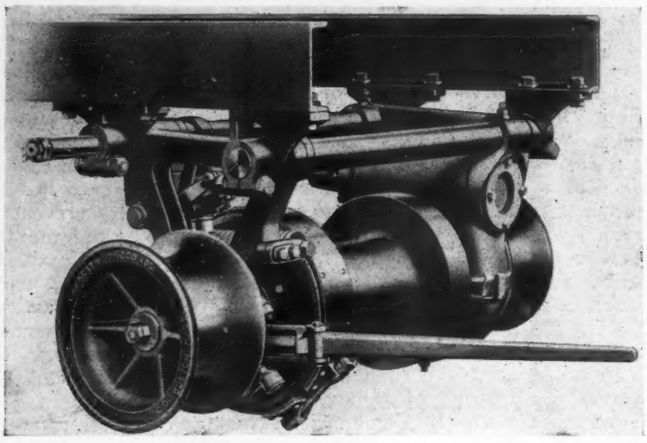
Its utilization enables the employment of a smaller truck capable of higher speed and with a short turning radius. Its position at the rear of a truck also makes it possible to back the truck up to the man hole, thereby saving street room.

This winch has a pull of 5000 lb. and the drum will hold 425 ft. of 7-16 in. wire rope. It weighs 550 lb. complete. When used in connection with telephone work, this winch is particularly desirable where it is desired to use wire rope on the winch heads. This winch also can be used satisfactorily in logging.

A power take-off from the transmission provides this apparatus with operating power, the operating speed of which is governed by the speed of the truck.

This winch is easily operated by one man. Its method of pulling is said to be so sensitive as to enable the operator to ascertain immediately by the "feel" whether or not any obstacle is being met. The ease with which the passage of cable is determined prevents the possibility of damage being done to the cable by sharp objects or obstacles in the duct.

The winch itself is the same for all trucks but the supporting rods vary in length dependent upon the width of the chassis. One rod is sometimes extended on both ends to support the rear springs. The worm shaft is usually connected by universal joint with a long shaft which runs forward for chain connection to the power takeoff. The driving and control parts are the same as for other drum winches.



Close-up of the New Mead-Morrison Underslung Friction Drum Winch.
It is operated from power taken direct from transmission

Practical Application in Telephonic Underground Operations
This winch is easily operated and controlled

Lutz Tire Chains

A new type of chain which can be used on truck wheels is being manufactured by the Lutz Co., Inc., Morris & Bambrey Sts., Phila., Pa. The accompanying illustration shows the features of this chain. Two of these are that any number of chains can be used and that they can be quickly attached.

The pipe chains used to attach the cross chains are firmly held in position and supported by pressed steel pipe supports bearing against the edge and inside diameter of the felloe. They are forced against the inside diameter of the felloe by two adjusting plugs, one on each side of the complete coil, thus forcing the pipe against the pipe clamp and making the device rigid. Locking screws are used to draw the two coils tight together. Lock nuts are tightened on each of the pipe brackets with lock washers intervening, providing a tight and firmly supported rim that will accommodate any number of chains desired.

Lutz Universal Safety Chain

A special patented clamp made up of two parts is used, one end of which is fitted with a special rivet and cotter pin to which the end of the chain is fitted and the other end has a locking pin and elliptical constructed opening, from which the pin may be drawn by inclining the head at right angles to the clamp.

The two rings have holes through which cotter pins may be placed to limit the movement of the chains around the wheel. This construction is also used to change the location of the chains to make the wear on the tire uniform.

The New Weaver Wheel Alignment Indicator

One of the greatest items of expense in the upkeep of a motor truck lies in the tires.

Anyone who has had any great experience with motor cars is familiar with the fact that the greatest single factor responsible for unnecessary tire consumption is the mis-alignment of the wheels, front or rear.

It is perfectly evident that when the wheels are parallel, the wear on the tires is at a minimum since the wheels simply roll along the road or pavement with no friction. Any deviation from this parallelism, however, develops a side thrust or "drag" on the tires that is very destructive, especially when driving over pavement or hard surface roads.

To be more explicit, if the front wheels of a car are out of true alignment one inch, it naturally follows that the tires must be dragged sideways three inches in every revolution. Figuring upon this basis, a thirty-inch tire would be dragged sideways 168 feet in every mile that the car is driven.

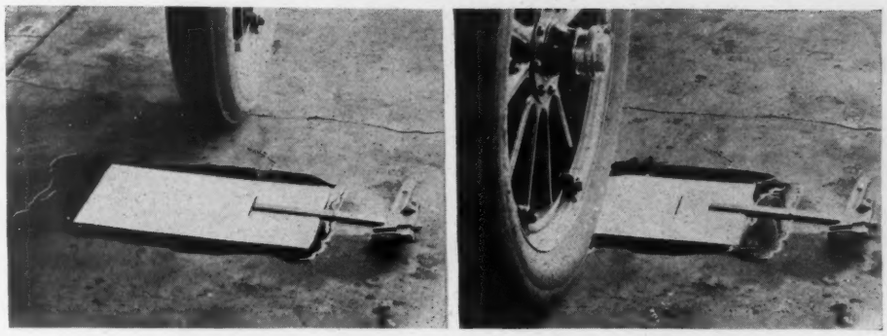
It is very possible for the wheels of a car, particularly the front ones, to be considerably out of alignment when the car is in motion and yet this fact be scarcely apparent to the casual observer when the car is standing still. This is due to play or lost motion, resulting from worn steering mechanism, loose wheel bearings, etc., which will usually permit the wheels to assume a normal position when standing still. However, as soon as the car is put into motion, all of this wear or loss motion in the steering mechanism, wheel bearings, etc., is absorbed and any tendency towards misalignment of the wheels is multiplied by this lost motion. Consequently, when the car is driven, the wheels are very badly out of alignment, whereas this fact is not apparent when the car is standing still, even though it may be measured as carefully as possible with a ruler, tram, or similar device.

When one stops to consider the inconvenience as well as the inaccuracy of the methods hitherto employed for checking up the misalignment of the wheels after it may have been suspected by the car owner, it is not so difficult to understand why this all-important matter has apparently been neglected in the past.

It seems reasonable to expect, however, that the introduction of an instrument which will accurately record the misalignment of the wheels to the minutest fraction of an inch by simply driving one wheel of the car over it will do much to eliminate tire waste in the future and guess work in wheel alignment.

The circumstances which led to the conception of the principle involved in the Weaver Wheel Alignment Indicator, manufactured by the Weaver Mfg. Co., Springfield, Ill., will, no doubt, be of general interest. The idea was first conceived by the inventor as a result of his attention being attracted by the very noticeable difference in the impression left in sandy or oil-coated roads by the wheels of different cars which passed over them.

In investigating closely, he found that a car having the wheels in perfect alignment left a clean, evenly balanced impression in the sand or oil while, on the other hand, the car having its wheels more or less out of proper alignment continually pushed the soft surface of the road which was misplaced by the weight of the tire to the side towards which the wheels inclined.



Showing the Manner in Which the Weaver Wheel Aligner is Employed
The amount of misalignment, if any, is immediately and automatically registered on a dial after the truck wheel has passed over the instrument's sensitive plate

This condition convinced the inventor that the amount of the side thrust on the tire could be measured in some way so as to accurately record the actual misalignment of the tire while the car was in motion.

His first real experiment consisted of placing a piece of cardboard on a heavily greased spot on a cement road with a mark on the cardboard to indicate the amount of travel as the misaligned wheel passed over it. He then drove a car with the wheels quite radically out of line over this cardboard with the result that the cardboard was drawn sideways a distance corresponding to the misalignment of the wheels.

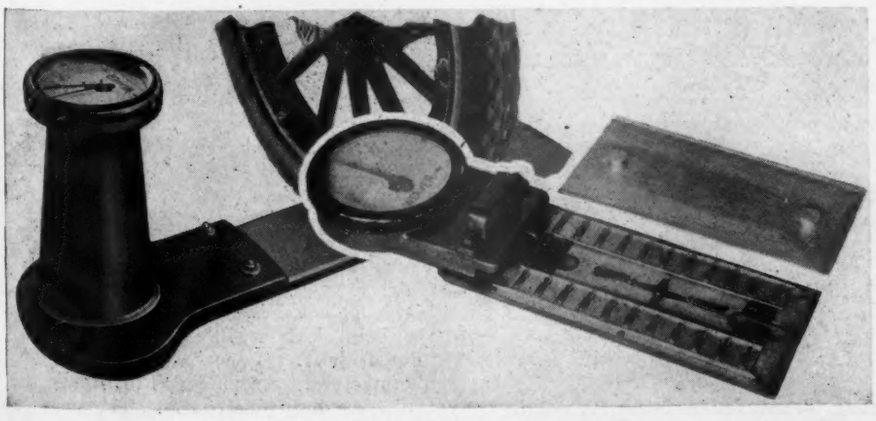
As the other wheel was still in contact with the rigid surface of the road, the side thrust on the tire caused by the misalignment of the wheel was instantly relieved as soon as the one wheel passed onto the greased cardboard which would not offer the same rigid resistance as the hard surface of the road. The instant the wheel passed onto the cardboard, the wheels were immediately relieved of all side thrust and consequently endeavored to assume a normal position.

It is plain to see, therefore, that the movement of the cardboard occasioned by the wheels of the car recovering from the strain resulting from the misalignment of the wheel, indicated the degree to which the wheels were out of true alignment. This experiment is illustrated herewith.

It, therefore, remained for the inventor to perfect a means for accurately recording these measurements and the Weaver Wheel Alignment Indicator is the result. The principle is simple in the extreme. The instrument consists only of two flat steel plates with roller bearings between, the upper plate being accurately connected with a recording mechanism which registers the movement of the plate on the dial. The method of recording the misalignment of the different sizes of wheels by means of the hand on the dial was, of course, a somewhat more complicated undertaking but this has been carefully worked out by the manufacturers of this instrument and they are prepared to stand back of their claim that the reading is accurate to the minutest fraction of an inch.

With this instrument it is only necessary to run the car slowly over the plate and a glance at the dial will show the misalignment of the car wheels while the car is in motion or, in other words—the true running alignment. The Wheel Alignment Indicator is built in two sizes, as shown in the accompanying illustration. The large or stationary type is designed for use in the runway of the garage so that cars passing in or out will pass over it. This type is equipped with an electric bell which rings if the wheels are out of alignment more than the minimum degree which the garage man chooses to establish. Ordinarily it is considered that three-eighths of an inch misalignment is not serious and the Alignment Indicator can be set so that the bell will not ring unless the misalignment is more than this or any minimum which the garage man chooses to establish.

The smaller or portable type of instrument is designed for use in the shop in aligning the wheels after the stationary instrument has shown that the wheels need attention. Both types, however, are sufficiently rugged for service under the heaviest commercial car or passenger car service. This instrument is being exhibited by the Weaver Manufacturing Company at the Automotive Equipment Show, which is being held in Chicago, Nov. 15 to 20.



Weaver Wheel Alignment Indicator

The State of Illinois shows a truck registration to date of 64,000 vehicles. This is an increase of 20 per cent. over last year's registration.

Walker Balanced Double-Reduction Gear-Drive Rear Axle

The Walker axle, manufactured by the Walker Axle Co., East Chicago, Ill., not only closely parallels the chain-and-sprocket principle of power application to the rear wheels, bringing with it its flexibility of pull and double reduction, but also combines in a single cross member the functions of load carrying and driving. First reduction is obtained through the pinon and bevel drive gear in the differential housing, which is part of the integral tubular axle housing. From the differential the power is transmitted through two floating jack shafts to the rear wheels, where the second reduction occurs between the gears in the hub case. This performance corresponds to the reduction which takes place between the sprocket and wheel of chain drive.

The Walker axle contains a comparatively small number of parts. The complete axle comprises only three units; the housing, differential and wheels.

A prominent feature of this axle is that instead of receiving the power from the small pinion in the hub located on the wheel end of the floating axle, through one idler gear, two idler gears receive and transmit the power to the ring or bull gear attached to the wheel. This construction greatly reduces tooth and bearing pressure, which condition not only increases the longevity of these parts, but makes for smoother operation. This entire drive assembly is completely encased, operating in a dust-tight bath of oil at all times, with the result of almost frictionless running, a condition that expends a minimum of the generated power in transmission.

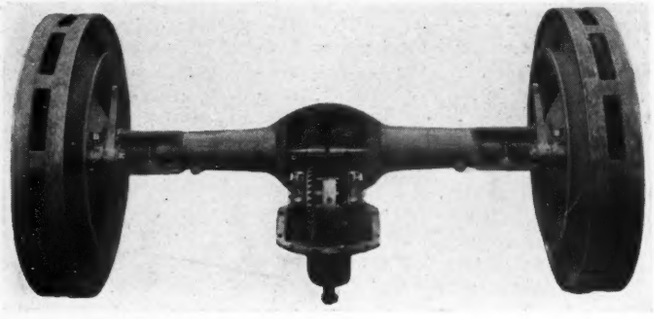
In the designing of the Walker axle special stress was placed on the securing of minimum unsprung weight with the result that the three models of this line, namely: 2A for trucks of two tons capacity; 5A for trucks of five tons capacity; and 7A for trucks of seven and a half tons capacity, are unusually low in unsprung weight.

Another feature given serious consideration is that of accessibility. The two main unit assemblies permit easy access to the two sets of gears for inspecting and cleaning purposes. The differential assembly can be entirely removed by unscrewing twelve cap screws retaining the differential cover-plate, and the wheel-gears can be reached quickly by removing the wheel nuts which hold the wheel.

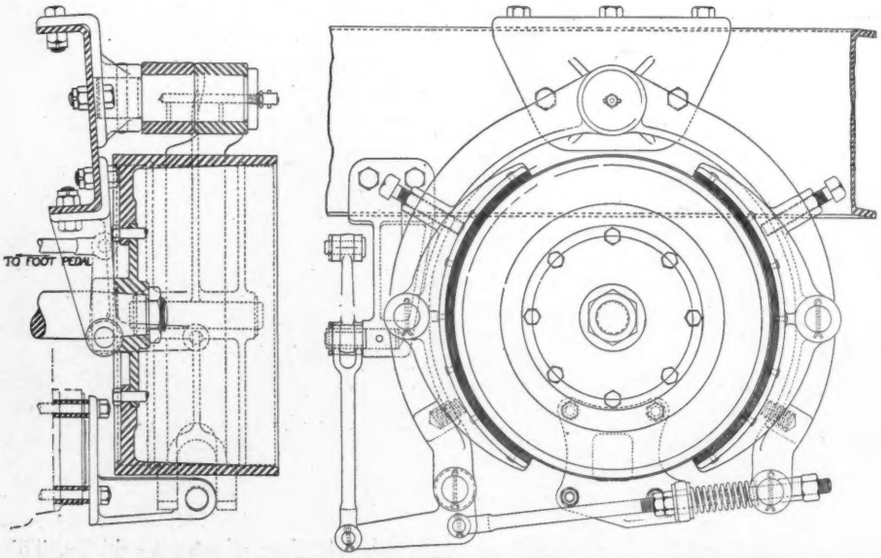
The load-carrying member, enclosing completely the jack shafts and its component parts, is free of irregular dirt catching pockets and surfaces, thereby reducing to a minimum an excessive accumulation of foreign matter on the axle.

It is pointed out that the effects of misalignment, due to bending stresses on the housing, are minimized because of the floating construction of the pinion and jack shaft or driving member. The possibility of bending stresses being transmitted to the jack shaft is circumvented by the ability of the two jack shafts to seek positions best adapted for transmitting their torque. They are not mounted in bearings; but flexibly mounted. As previously mentioned, each jack shaft floats between two idlers at one end and at the other or differential end it is mounted with a sliding fit, which constructions permit them sufficient latitude of freedom.

As the gearing within the wheel is enclosed in a chamber independent of the brake, which is the emergency brake, operation free from possible oil leakage is assured. The transmission brake, which performs as the service brake, can be furnished to those who desire to purchase rather than make his part.



Access is Afforded to Every Necessary Part.
Note the simple and smooth outline of the entire assembly.

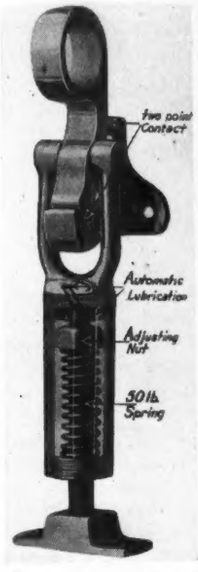


Mechanical View of the Twelve-Inch Floating Transmission Brake, Which is Furnished Extra, if Wanted

New Ideal Hood Lock

The Ideal Brass Works, Indianapolis, Ind., is manufacturing and marketing a new hood lock which is easily operated, is adjustable and self-oiling, and is said to eliminate rattling of the hood.

This hood lock is of the eccentric type which permits the lock to be operated with but one finger and which also permits the use of a stronger spring than is being used in the present type of hood locks. The eccentric locking element is associated with the hood catch so that a two-point bearing is secured. This is the feature, as may be seen from the accompanying illustration, that prevents rattling of the hood.



Ideal Hood Lock
It is of the eccentric type. This construction permits the lock to be operated with one finger and permits the use of a larger spring.

The hood lock is adjusted by rotating the concentric support or lock body, on the anchor bolt which lengthens or shortens the lock as desired. The lock body carries an absorbent pad containing sufficient oil for lubricating all moving parts. Each time the lock is released the anchor bolt automatically is forced into engagement with the absorbent pad, which lubricates the moving parts.

All exposed parts are made of brass, highly polished and nickel plated. While the hood lock will be found on many known jobs, the coming season, the manufacturers are prepared to supply the trade and individual users. The price is $1.25 each.

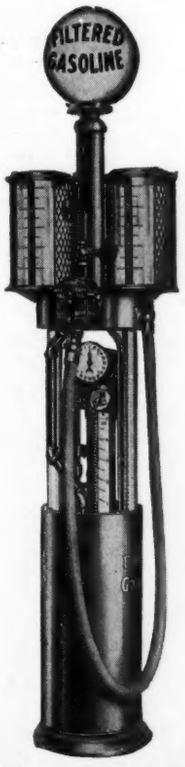
Wayne Super-Visible Gasoline Pump

In the Wayne Super-Visible pump, product of the Wayne Oil Tank and Pump Co., Fort Wayne, Ind., measures have been taken to protect both the dealer and consumer; first, against collusion between dishonest clerks and customers; and, secondly, against short measurement.

Every drop of gasoline to which the consumer is entitled and that is filtered into the glass containers is honestly discharged. A special five valve prevents the return of any gasoline to the underground tank while either of the two containers are being filled or emptied; nor can it be siphoned from the customer's vehicle tank. Any gasoline in the containers can be returned to the underground tank at any time, except when delivery is being made to the customer, during which period the drain pipe automatically closes. Leakage can be immediateiy ascertained, short measurement acting as a check. As the hose is completely drained after each delivery no overflow is necessary.

Misleading optical antics due to parallax, which is the apparent changing of the relative position of the pointers and graduations resulting from the observer looking at them from different angles, are said to have been eliminated as all graduations are made on the inside of the containers.

Economy in time is the objective of the dual container design. Waiting is not necessary as one glass container may be filled while the other is being emptied. No extra pipe and fittings other than those required for an ordinary pump are employed because of this dual design.

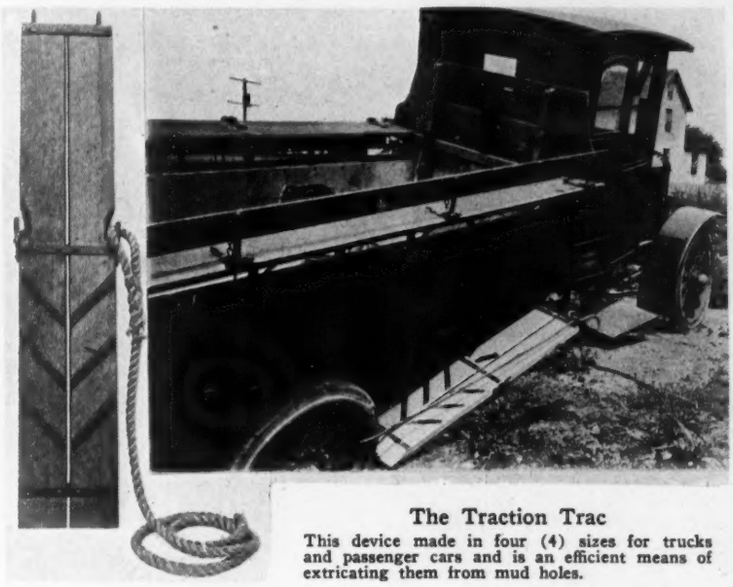


Complete Wayne Super-Visible Pump

As the pump can be locked in or out of service the owner is protected against fraud. The glass containers are detachable and can be removed quickly and easily without affecting the measurement.

This model is constructed of heavy cast-iron, black-iron, brass and sheet steel. Valves are brass. The patented continuous forward motion of the pump delivers five gallons with fifteen forward strokes. The sliding housing, which hangs on counterbalanced weights, slides up and locks at the top. An attractively lettered, sand-blasted 16-in. round glass globe is mounted on the top of the pump. A large electric light, supplied under the dome, automatically lights at night when the housing is dropped and shuts off when the housing slides up. The suction line is 1½ in. and the discharge is 1¼ in. diam. The heavy brass hose tube is 1¼ in. diam. and 10 ft. long. The pump complete is 9 ft. 4 in. in height; its base requires a space of 20½ in. diam., and its top diameter is 28¾ in.

Standard equipment includes 1½ in. foot valves, filter, meter, discharge register, quantity scale, globe, hose, hose tube, overhead drain valve, shutoff valve and union for connecting suction line.



The Traction Trac

This device made in four (4) sizes for trucks and passenger cars and is an efficient means of extricating them from mud holes.

Device for Extracting Trucks from Mire

The purpose of the "Traction Trac," manufactured by the Auto Traction Trac Co., with a main office at Berlin, N. J., and works at Williamstown, N. J., is to provide traction to truck wheels mired in mud. The maker states that no matter how deep the wheels may be submerged in mud utilization of this device will provide an effective traction surface that will facilitate the truck's quick extrication on to solid ground.

This device consists, primarily, of two heavy parallel planks securely fastened to one another by metal braces. Strips of metal are fastened diagonally on the faces of the planks in such a manner as to form a series of "V's." These strips, which give traction to the wheel, are thick or deep at the outer ends and thin at the middle. This construction keeps the wheel in the center of the board. The end of the device which is inserted down into the mud hole is tapered and the opposite end has studs or metal projections to allow the looped ends of the ropes furnished with this outfit to be attached.

The operation of the device is as follows: The main member is slipped down into the mud hole with the tapered end downward and each end of the rope is slipped over the studs at the upper end, the rope being passed between spokes of the wheel. Power is then applied and the rope will draw the wheel on to the planks and the cleats on the plank will give traction to the drive wheel enabling the car or truck to come out of the mud hole under its own power. As the car climbs out the studs automatically release the rope, preventing it from winding up on the brake drums or brake rods, allowing the car to proceed to firm ground. This device is made in four sizes. The Ford size sells at $5 per pair and a heavy duty size for 3-ton trucks or over at $20 per pair, and two intermedite sizes. The heavy duty model uses chain in place of the rope.

N. A. C. C. Makes Traffic Survey

Almost a third as many people use passenger cars for travel in and out of Manhattan daily as those who use interborough subway travel, according to statistics recently compiled by the National Automobile Chamber of Commerce, New York. Passenger cars and trucks using the bridge and ferry to and from New York are 154,700.

The average number of passengers carried per car is 2.7 and the trucks have an average load of 1.14 tons. Manhattan and Queensborough bridges have the heaviest motor traffic, which at times reaches as high as 1,344 cars per hour. Seventy-eight per cent of the bridge vehicle traffic is motor driven.

SERVICE AND REPAIR DEPARTMENTS

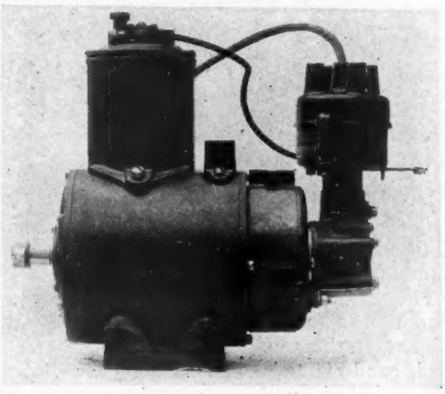
Conducted by C. P SHATTUCK

Methods Approved by Factory for Making Adjustments and Replacements on North East Ignition System

THE following are the approved methods for making adjustments and replacements on the North East ignition systems manufactured by the North East Electric Co., Rochester, N. Y. The directions contained herein do not include all work performed at the factory, its branches or service stations, but are those which the mechanic of the commercial car dealer may use to locate and correct troubles, such as cleaning and adjusting the components, as well as making certain replacements. If after carrying out the instructions, further trouble is experienced the unit should be sent to one of the North East branches or authorized North East Service stations. Branches are maintained at Atlanta, New York City, Chicago, Detroit, Kansas City, San Francisco, Rochester and Windsor, Ont., Can., and service stations are located in the principal cities.

Components of System

The ignition set consists of an ignition head and a coil. The ignition head is made up of the breaker box and the distributor mechanism. The current is supplied by the generator when the engine is operating at ordinary speeds and by the storage battery at slow speeds and when starting. There are two forms of spark

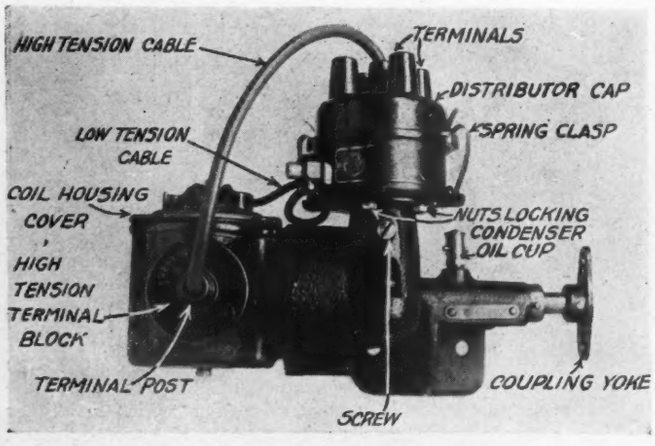


Ignition Unit Employed With Generator

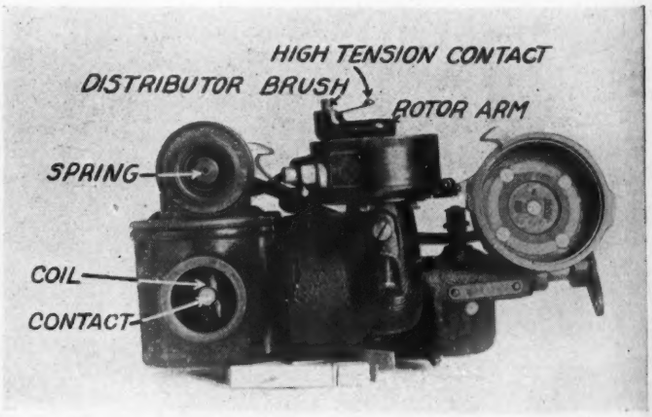
control, manual advance and a combination of automatic and manual advance, called semi-automatic. The breaker box contains the breaker contacts, breaker cam and condenser, the last named sealed in a metal container that is easily and quickly displaced.

The breaker arm, movable member, which is pivotally mounted, is insulated from the pivot stud by a self-lubricating bushing. A helical spring attached to the pivot end of the arm and anchored to a stud, exerts such tension that the contact on the arm is normally kept in contact with another or fixed contact. The system is, therefore, of the closed circuit type. Separation of the breaker contacts is accomplished when a fibre block near the center of the breaker arm rides on a lobe of the cam on the vertical driving shaft. This interruption of the primary current causes a high-tension current to be induced in the coil mounted in a housing. The high-tension current is conveyed from the coil through a cable to the central terminal of the distributor cap. This terminal is in contact with a distributor brush carried by a rotor-arm. This distributor brush, in turn, contacts with metal segments in the distributor cap and through them selectively conducts the high-tension current through cables to the proper spark plug.

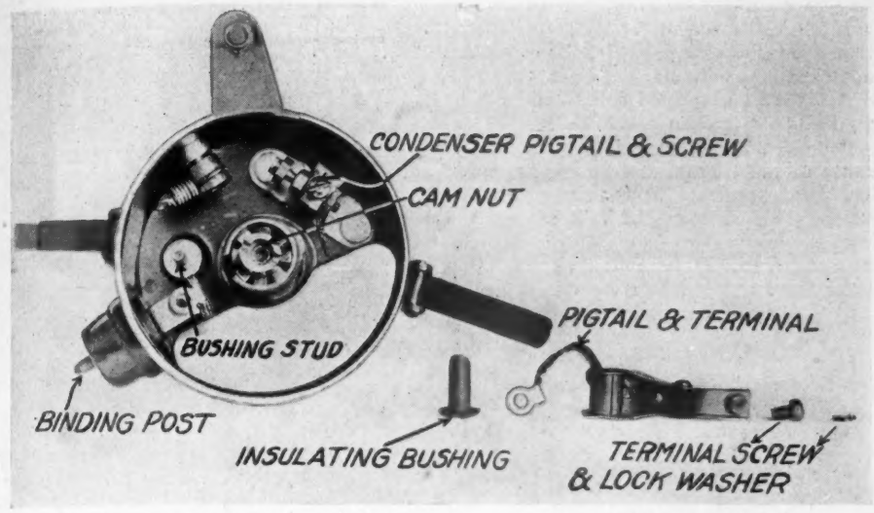
Before making any adjustments or tests on the ignition set, it should first be determined that the trouble is not due to the spark plugs carburetor or engine. Disconnect the cables from the spark plugs and support the terminals of each so that they will not be more than ¼ in. from the metal of the engine. Turn on the ignition switch and crank engine slowly, noting if a spark jumps regularly from each terminal once every two complete revolutions of the crankshaft. If a good spark is obtained at each terminal, examine and test each plug. Set the gap of



Model O Ignition Unit, a Grounded Return System
All the important component parts are lettered



Showing the Distributor Cap Displaced, Rotor Arm and Brush
The ignition coil and cover is shown removed from coil housing. High tension contact on coil can be seen



Showing the Breaker Arm and Insulating Bushing With Pigtail Removed
The helical spring controlling action of breaker arm can be seen, also pivot or bushing stud

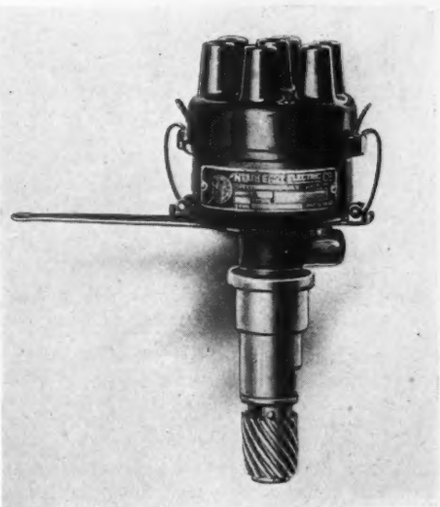
each plug by the .03 gage on wrench supplied with equipment. If no spark be obtained, the first step is to examine the breaker contacts.

Slip spring clasps (2) off distributor cap and remove cap. Remove rotor arm by lifting off. But before starting any work see that IGNITION SWITCH IS TURNED TO "OFF" POSITION, else damage through short circuits or grounds will result. Assuming that on separating the contacts they are found dirty or pitted the contacts should be cleaned and smoothed. It is best to remove the breaker arm complete. With small screw-driver **remove screw and lockwasher which secures terminal of breaker arm pigtail.** Insert the tip of blade of small screwdriver under breaker arm about midway between the insulating bushing and fibre block, taking care not to damage the bushing, and pry upward. At the same time steady breaker arm with fingers. **Lift breaker arm off pivot post.** The arm will free itself from the spring. Do not remove the spring from the breaker box. If bushing sticks to pivot post, allow it to remain. If it turns easily in breaker arm displace it, as the next step is to wash the breaker arm in gasoline. Dry it thoroughly before replacement.

If both contacts are rough they can be smoothed up by using an oil stone, but care must be taken to keep the contacting faces square or parallel with one another. If contacts are to be smoothed it will be necessary to remove the fixed member. **Loosen lock nut of fixed contact and back out screw member.** It has a right-hand thread.

If points are badly pitted, generally due to the presence of foreign elements or oil, it is best and cheapest to install new, as the list price of the new complete breaker arm and contact stud will be less than the labor cost of repairing the contacts. It should be borne in mind that the contact stud (fixed contact) cannot be removed without first displacing the breaker arm. **Wipe out breaker box** with soft cloth moistened with gasoline and dry DO NOT FLOOD BOX WITH ANY CLEANSING FLUID.

Should the breaker arm pigtail become damaged through accident or careless handling of the breaker arm a new pigtail can be installed as follows: After removing the breaker arm from the breaker box melt the solder holding the pigtail



The Distributor Assembly, Showing Vertical Shaft and Gear

under the small clip or lug on the breaker arm. Remove old pigtail and insert new one, soldering it under the lug.

After cleaning the contacts or installing new ones see that insulating bushing is in its proper position on the pivot post. An accompanying illustration shows the bushing correctly located in the breaker arm and another view is given of the bushing itself. In replacing the breaker arm hook free end of helical spring over spring lug on the breaker arm. Hold the arm so as to keep the spring slightly stretched, slip arm over pivot post and press down carefully until it seats. Before this is done, however, the stationary contact stud with its lock nut must first be replaced. Screw in contact sufficiently (about half way), so that it will not meet breaker arm contact, and test action of arm. It should move freely and easily if it has been properly removed and replaced.

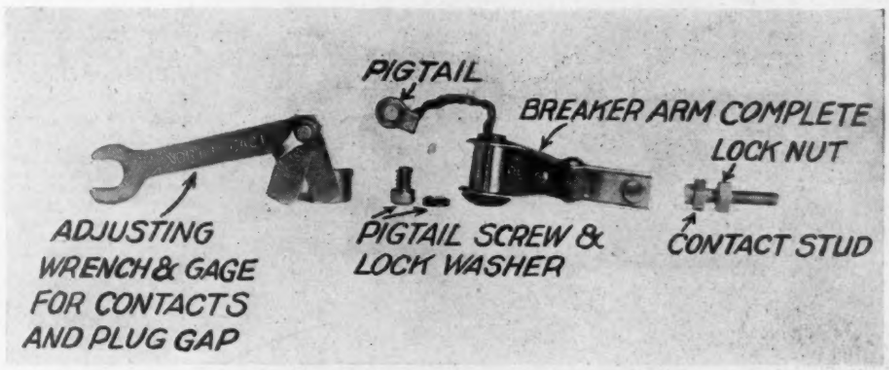
Screw out contact (stationary member) until it contacts with breaker arm contact, when the cam is in such position that a lobe does not make contact with the fibre block of breaker arm. Place a piece of white paper in back of the points, as shown in the illustration depicting the beaker, and note if the contacts meet squarely. There should be no space between them. If there is, when using new contacts, use a pair of flat pliers and bend arm until contacts meet squarely. A slight bend will be sufficient and the pliers should be used near the contact end of the breaker arm.

Adjusting the Gap

To adjust the contact gap set the lobe of the cam so that it pushes breaker arm back to the limit of its normal movement. Adjust the stationary contact stud using the special contact wrench until the space between contacts equals that of gage marked O2. Use two wrenches, one for turning contact and other for holding the lock nut. **Tighten lock nut** and use gage a second time as it may be that the adjustment has been disturbed in setting up the lock nut. Care must be taken in adjusting the points not to have the gap greater or less than the thickness of the gage and the work should be carefully done. **Remove paper from breaker box. Replace pigtail terminal** of breaker arm on its binding post. **Replace lock washer and screw and tighten screw.** See that the thin fibre insulator inside of the shell is in place to prevent the pigtail from grounding against the shell.

Testing Condenser

If after completing this work and the unit does not operate satisfactorily, and



The Wrench Has Two Gages, the .02 for Contacts and .03 for Spark Plug Gap
The breaker arm and contact stud are also illustrated

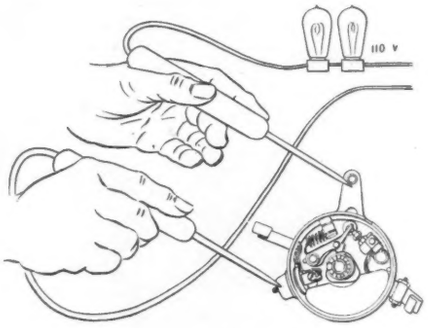
the condenser or coil be suspected, the former may be tested. To test the condenser for a ground, disconnect the condenser leads from their binding posts in the breaker box. Use the test lead shown in an accompanying illustration and hold one lead against the condenser case and touch the two condenser leads successively with the other test lead. The test lamps will light if a ground is present.

The short circuit test should be made with the breaker points separated, by holding one test lead on each of the condenser terminals. The test lamps will not burn if the condenser is in a normal condition, but will light if it is short circuited.

The open circuit test is made with the test leads supplied with an alternating current. When making this test separate the breaker contacts, then hold one test lead against one condenser terminal and touch the other terminal lightly with the other test lead, noting if any spark occurs. If the condenser is in a normal condition, slight spark will occur each time the test lead is applied, but if the condenser is open circuited no spark whatsoever will occur. In either case the test lamps will not light, because even with a normal condenser the current permitted to flow through the test lamps is so small that no visible effect will be produced. If condenser is faulty it can be removed as follows: **Remove the two nuts on the underside of the breaker box.** These retain the condenser in place. **Remove screws (2)** securing condenser pigtails to binding posts and **remove the condenser. Install new condenser. Replace rotor arm** and inspect to see that there is sufficient clearance between the hub of the rotor arm and cover of the condenser case. **Replace pigtails, lock washers and screws. Replace and tighten nuts on bottom of breaker box.**

Examine distributor brush, but do not tamper with the spring. If brush be broken or damaged replace with new. To **remove distributor brush** pull out straight. In installing a new brush tip it to about 45 degrees from vertical and with tip of fingers compress the first coil or two of spring in the opening. The spring can then be pushed home easily. If not it has not been properly started.

A test of a suspected coil should not be made by other than a service station expert. If the coil is thought to be the cause of the trouble after the other work has been completed, a new coil can be installed. To **remove the coil** release the high-tension cable from the coil high-tension terminal block and unscrew the latter from the coil housing. It is necessary to remove this part in order to avoid injuring the contact spring in the terminal. Unscrew the nut from end of the coil tie-rod that projects through the bottom of the coil housing. Disconnect the two cables that are attached to the low-tension terminal block on the top of the coil housing cover. With coil still attached to the cover, withdraw it from the housing. Unscrew the nut from the end of the tie-rod that projects through the low-tension terminal block on the cover and after separating the cover from the oil

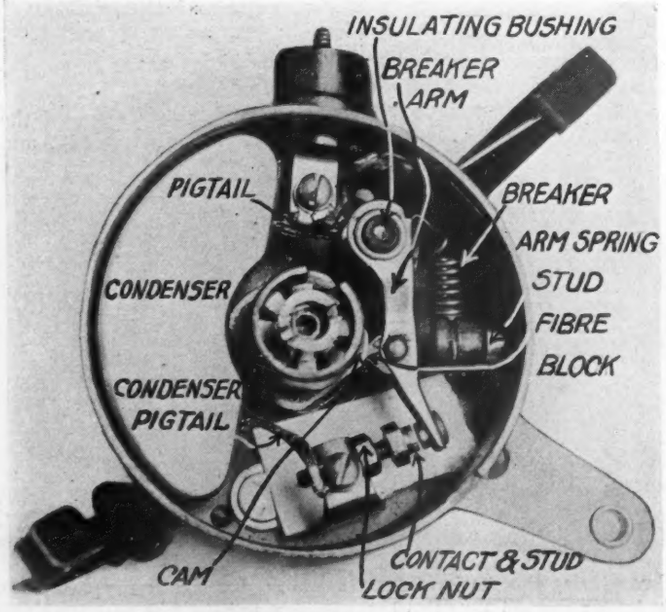


Test Lamp Used for Determining Accurate or Correct Setting of Cam

disconnect the two primary leads from the inner terminals of the low-tension terminal block.

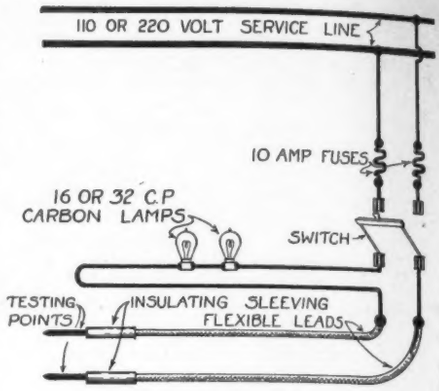
Replacing Coil

Before installing new coil see that it and the coil housing are clean and free from moisture, oil, etc. To install coil



The Breaker Box Assembly and Showing Lobe of Cam Contacting With Fiber Block, Separating Contacts.

A piece of white paper placed in back of contacts is used to determine proper contact of contacts but points must meet when making the inspection.



Illustrating Test Lead Circuit

connect the two primary coil leads to their respective terminals on the cover terminal block Slip the cover down over the tie-rod and hold it temporarily in position by screwing the nut down two or three threads on the upper end of the rod. Place coil with cover attached in the coil housing. Apply the lock washer and nut on the lower end of the coil tie-rod which projects through the bottom of the housing. Screw this nut up securely until the coil is drawn down firmly against the bottom of the housing. Draw cover down by tightening the nut on the upper end of the coil tie-rod, after making sure that the gasket is in place between the cover and the housing. Connect the leads from the breaker box binding post and from the ignition switch to their respective terminals on the low-tension terminal block. Replace the high-tension terminal bushing the front of the housing after first making sure that the contact spring and also the washer are in place. Attach the high-tension connector from the distributor head to the coil high-tension terminal post.

Lubrication

With the units which include an automatic advance mechanism lubrication is supplied by the grease in the automatic advance compartment. The original or factory supply of grease ought to be sufficient for several seasons. If, however, new lubricant is needed, it should be supplied with care to avoid overfilling the compartment. Use No. 4 Keystone grease or its equivalent. The compartment should never have over 3 cu. in. at any time. The horizontal shaft is lubricated by the grease from the compartment, but a grease cup is also provided and should be turned down every 1000 miles.

On other models there is an oil cup on the vertical shaft and drops of high-grade cylinder oil should be used every 1000 miles.

Removing Breaker Box Assembly

If the breaker box assembly is removed for any reason, certain precautions should be observed in order to avoid retiming the unit. Before removing it fully retard the spark or move breaker box to the limit of its travel in a retard position. Make a mark on the end of the distributor rotor and a second mark exactly in line with the first mark on the edge of the breaker box shell. These marks must be

(*Continued on page 102*)

Here's a Service Plan That's a Benefit to Both Dealer and Manufacturer*

It Will Help the Dealer Secure More Business and the Manufacturer Will Have a Better Check on His Dealers

THE need of closer contact between the truck manufacturer and the dealer; the necessity of the former and his distributor directing the efforts of the associate or subdealer, were points discussed by the writer in the October issue of the COMMERCIAL CAR JOURNAL. It was shown that too many manufacturers and their distributors were content with placing a "representative," selling him a demonstrating chassis, then letting him paddle his own canoe. Failure on the part of the distributor to start the young dealer in the right path and the general lack of interest in his dealers are conditions which are largely responsible for the unsound business policies noted among many dealers today.

Lack of Co-operation

In that article a concrete example was given of how "truck order taking" was carried on in a small city. It was pointed out, in the case of the dealers cited, that there had been no co-operation on the part of the distributor nor had there been any effort made to educate the dealers along any lines. In that instance the distributor, apparently, was content to renew the contract—although the dealer had not sold a truck and still had the original demonstrating chassis. The dealer in question was quoted as saying "that he was convinced that the factory did not know of the existing conditions, that he did not deem it wise to go over the distributor's head, and that he had NEVER RECEIVED ANY CO-OPERATION FROM THE FACTORY or the distributor for that matter."

Locality of Future Market

It was also stated in the article that some manufacturers were making efforts to bring about a closer relation between the factory and the dealer, realizing that in the future, the **work that trucks do** must be sold and not the truck. These manufacturers also appreciate the fact THAT THE BULK OF THE FUTURE SALES WILL BE IN THE UNDEVELOPED TERRITORIES and that many of the present sub or young dealers in these places will be the future successful merchandisers of motor highway transportation. And, a few manufacturers also realize that the new dealer must be started right—for unless he merchandises the work that the truck does, gives service that satisfies and conducts his business in a stable manner, the maker's distribution **will be limited.** And the succeeding dealer will find a sales resistance very difficult to break down.

An example of a broad-minded policy of educating and assisting the dealers is shown in the case of the Selden Truck Corporation, Rochester, N. Y., which is one of the manufacturers referred to in the previous article. This company has formulated a co-operative, educational dealer campaign and among the plans recently placed in operation is an Inspection Service System. In outlining this plan the ideas of the service, engineering and sales departments as to inspection service were included. The system includes letters to the owners, forms for checking up the system, and directions which are not only very complete, but should be easily carried out by the new dealer.

Service Makes Sales

The Selden Company realizes that service is a feature that leads to permanent success and that **the right kind of service** keeps users of its product satisfied, enables the dealer to maintain a closer contact with his customer and reduces to a minimum the sales resistance for repeat orders. The plan provides for monthly inspection, which, in itself, is not new, but the service is free and the SAME SYSTEM IS TO BE USED BY ALL SELDEN DEALERS AND DISTRIBUTORS. This should assure the user, small or large, of a standard service.

Dealers are to make a monthly inspection of every Selden truck in their territory, regardless of its age. While it is suggested that it is desirable from the dealer's standpoint to have the truck driven into the service station, it is difficult to sell every owner on the plan, so therefore, it is recommended that the inspector be provided with a small car or motorcycle and side car and that inspection be made of the busy truck when it is being loaded or unloaded.

Picking the Right Man

It is also suggested that extreme care be exercised in selecting the inspector. He must not only be a good mechanic, possess good personality and some sales ability, but he must be tactful in his handling of certain problems. It is an easy matter for the inspector to bring about friction between the owner, driver and himself. Being in close contact with the owner and driver the inspector should be able to co-operate with the sales department in obtaining repeat orders and prospects.

Anticipating criticism that the small dealer cannot put the plan in operation, that he cannot afford to engage an inspector of the qualifications named, it is stated that the Selden Company has a plan whereby raw material may be developed. Furthermore, the new dealer will have but a few trucks to service and that his mechanic, or dealer for that matter, can officiate as an inspector until the volume of sales warrants the employment of an inspector. The thought is to inaugurate the inspection-service plan with the sale of the first truck and **it is the reputation that the dealer acquires or builds in his first sales and service that makes or breaks him.**

The Inspection-Service Plan

The Selden plan comprises 9½ x 5 in. sheets printed in quadruplicate and in pad form. There are four colored sheets, white for owner, pink for dealer, yellow for driver and blue for the chief inspector of the Selden factory. The system includes six follow-up letters which are mailed the owner of the truck, and sample forms filled-in and which illustrate certain features. These features are explained in detail and complete instructions are given for the operation of the plan—and **the dealer is sold by the factory on the value of the service and its relation to future sales.**

The first letter sent to the owner outlines the operation of the system, explains its advantages and asks for co-operation. The letter follows:

Crawford Company,
846 South Canal Street,
City.
Gentlemen:

In accordance with our policy to do everything possible to keep Selden trucks on the job at the lowest cost, we have installed the Selden national monthly inspection system.

If you will have your truck brought to our service station once every month we will thoroughly inspect it free of charge to you and send you a copy of our inspection report. You will readily understand that this inspection can be more effectively made if the truck is brought to our service station.

We will advise you several days in advance the date and time set for your inspection so as to give you sufficient time to arrange your schedules and have your truck at the garage. When your truck comes to our service station, one of our inspectors will give immediate attention and delay the truck no longer than is absolutely necessary to insure proper inspection.

The inspector will make his report on a form similar to the attached, the original copy being mailed direct to you. Any slight adjustment will be made free of charge and should the inspector find some work that requires immediate attention at the shop, your authority to proceed with same will be secured before going ahead with the work.

For your convenience, when it is not easily possible to bring the truck in on specified dates, our chief inspector will go to your plant or garage and inspect the truck while it is being loaded. However, this inspection cannot be as complete as those given at our station, unless the truck is idle for some time while loading.

We ask your co-operation in arranging for service station inspection whenever possible and we would appreciate a phone call if this is not possible at the time set, so that another date may be arranged. Your business is appreciated and you will have our hearty co-operation at all times.

Yours truly,
(Dealer's Name here)
(Signed by the Dealer)

P. S. Owing to the fact that you have more than one Selden truck we will designate the truck to be inspected by the serial number to insure proper monthly inspection on each truck.

(This is the first letter outlining the operation of the system. The postscript is necessary only when more than one truck is operated.)

*(Editor's Note.—This is the third of a series of articles on service and its relation to sales by Mr. Shattuck. The fourth will appear in an early issue.)

After the inspection schedule is compiled the second letter is mailed, notifying the owner of the time set for the inspection, why the serial number should be given so that the proper truck will be sent in case there is more than one. The No. 2 letter is to be sent monthly. The letter follows:

Crawford Company,
846 S. Canal Street,
City.
Gentlemen:

Please bring or send your Selden truck, Model A, No. 52186 to our service station for inspection on Monday morning, November 20th, at ten o'clock.

In order to give prompt inspection it is necessary for us to allot specified dates to the various Seldens now operating in your territory. If you miss the date specified above or come too late in the day, our schedule is upset and it is sometimes necessary for us to postpone the monthly inspection until a later date.

Please make an effort to get in promptly so that we can work to the best advantage and finish your truck in time for your needs.

If it is impossible for you to keep the appointment, please call our service station **AT ONCE** and we will endeavor to change the appointment to accommodate you.

Yours truly,
(Dealer's Name here)
(Signed by the Dealer)

As may be noted the inspection sheet provides for a complete report with space for remarks. It is believed that an owner receiving the white sheet will be impressed with the desire of the dealer to KEEP THE TRUCK ON THE ROAD AND PROVIDE MAINTENANCE AT A MINIMUM COST. The owner's copy is accompanied by a letter calling attention to details in the report. The letter, of course, is written after an analysis of the report is made. These letters differ, of course, according to the information given in the reports.

Keystone Lumber Co.,
17th Street,
City.

Attention Mr. Geo. N. Glass, President

Gentlemen:

We are pleased to enclose a copy of our Inspector's report on your Selden truck No. 6008, inspection being made on October 22, 1920.

The motor suspension really needs shop attention and should be attended to at once; also the universals and grease cups need grease, a point that should always be well cared for.

Our inspector adjusted the carburetor which should make for greater economy and better operations.

We have previously reported that the governor seal had been removed. Let us again ask that this be repaired at once. We can complete the operation quickly and thus save any damage from overspeeding.

Your truly,
(Dealer's Name)
(By Authorized Officer)

(In this case the report is fairly good and a letter similar to the above should be sent with such a report. Attention is called to the free service in form of carburetor adjustment made by the inspector; also that a previously reported fact that the governor seal had been broken, requesting that this be taken care of at once.)

Brynes & Kiefer,
1128 Penn Ave., City.
Gentlemen:

We are pleased to enclose a copy of our inspector's report on your Selden truck No. 59200. The report is clear and should easily be understood by your man in charge of your truck.

The slight adjustment in the fan made by our inspector will increase the efficiency of the cooling system.

We wish to call your attention particularly to the note on the bottom of the report in reference to the fact that no matter how good the material in any truck, it does require lubrication and your truck shows signs that this is being neglected.

Trusting that this report will be of some assistance to maintain the satisfactory operation of your truck, we are

Yours truly,
(Dealer's Name)
(By Service Manager)

(This letter calls attention to apparent neglect on the part of the driver in properly lubricating the truck, yet does not directly accuse the driver. It also touches on the adjustment made by the inspector, this time on the fan. Note the next letter follows with next month's report on this same truck.)

Brynes & Kiefer,
1128 Penn Ave., City.
Gentlemen:

We are enclosing our regular monthly inspection report on your Selden truck No. 59200 dated October 22, 1920.

Please note the difference in this report and the one rendered for last month. Any time required in properly oiling and greasing a truck, is returned to the owner many times over in the saving on repair bills and the keeping of the truck in service.

The item checked for immediate attention, i. e. clutch bearing requiring grease has been attended to by our inspector. By a small operation at our shop, we can prevent the service brake pedal from striking the accelerator rod.

We will be very pleased to give prompt attention to this any time the truck is brought to the shop, but would suggest Tuesday morning.

Trusting that your reports in the future will continue to be as good as the enclosed, we are

Yours very truly,
(Dealer's Name here)
(Signed by the Dealer)

(This report calls attention to the difference in report from last month; also emphasizing the attention given to the fact that only a small operation is necessary to correct the brake pedal and accelerator rod, suggesting the best time for this to be done and in a way giving a bid for the work which might be done some place else.)

Avoiding Friction

The reports are to be signed by some responsible person, either the owner or the person directly in charge of the truck, which may be the driver. This will avoid the possibility of misunderstanding between the owner, driver and the dealer. When a truck is found to be in first-class condition, the fact is emphasized and credit is given to the operator. This, the report states, will tie-up the driver with the dealer and the truck. The dealer is also advised to make capital of any adjustments or slight repairs made by the inspector and which are not charged for.

The final letter is for the owner who has not followed the suggestion of the inspector that certain work be done.

Sampson & Brown,
186 Market St.,
City.

Attention Mr. H. E. Brown

Gentlemen:

Last month our inspection report on your Selden truck No. 5009 indicated that your truck should be brought in for the installation of new brake linings, a fact we called to your attention.

In our letter with this report we said that if the truck was brought in on Wednesday it would have prompt attention, but it was not brought in yesterday and we want again to call this to your attention.

The brakes are a very important part of the truck, especially with hills such as we have here. With a heavy load pushing the truck down a hill and a need for a sudden stop, it would be almost impossible for the driver to avoid an accident because of the condition of the brake linings. Such an accident might damage the truck to a considerable extent, and even though it is covered by insurance, several days might be necessary in order to make the repairs.

We know that your truck is busy and that you cannot afford to run the chance of having it tied up, especially, when by bringing your truck to our service station, we can give it prompt attention and have it ready in good time.

May we suggest that the truck be brought in Thursday morning, not later than nine o'clock? Our best men will start on it and you can have it at noon. If you cannot send it in at this time, please call the writer and we will arrange a time later in the day when our men will be ready for it. May we again suggest that this not be neglected?

Yours truly,
(Dealer's Name Here)
(Dealer's Signature Here)

(This letter follows up the report of a previous month for close attention to needed repairs and specifies a time when the truck could be given prompt attention. Such a letter cannot help but impress the owner with the fact that the dealer is very much interested in keeping his truck on the job at the least possible expense. At the same time, it will bring a job to your service department which might otherwise go to some other place.)

If this letter does not produce the desired results within a few days, then a personal call is made or the owner is telephoned. If properly executed the service SHOULD IMPRESS THE OWNER WITH THE DEALER'S INTEREST IN KEEPING THE TRUCK OPERATING AT THE LOWEST POSSIBLE COST.

Builds Stable Business

The value of the data resulting from these reports to the dealer and the factory is obvious. The copy filed by the factory inspector supplies a record of each truck in service and is of great value to the engineering departments. It illustrates the contention made in the previous article, "that the value of factory-dealer co-operation and the co-operation of the dealer with old users not only brings in new business but builds a stable reputation for the dealer. And, the young dealer cannot build too carefully. The small dealer may contend that he cannot afford the service, but it is claimed that the expense will be more than offset by the work that will be brought to the dealer's station, and that the advantage from a sales point of keeping in close contact with the user is worth something. It is poor business to allow a customer to go elsewhere for his service, for the outside repair shop is more interested in its receipts, and not in seeing that the truck delivers the work for which it was sold. Besides, allowing the owner to go outside robs the dealer of the opportunity to sell the former his equipment and supplies. The future dealer will have a marked influence in the selection of the equipment of a truck, its lubricants and supplies.

Educating the Salesman

Among other plans, the Selden Corporation has already put into effect a transportation engineering sales school. This is not new for several manufacturers are conducting such schools. The merchandising of trucks is fast developing to a point where the salesman must sell the work the truck does, not specifications, and consequently the salesman must be able to analyze transportation problems, compile costs, etc.

Selden dealers and their salesmen are eligible and they are obliged to pass an entrance examination which is not difficult. The course is four weeks and the class is limited to twenty-five. The first week at the factory is developed to the construction of the various components in the truck and factory experts will be present to teach the men the details and good points of the various units. The chassis will be disassembled and reassembled. A written examination will be held and the student must have a certain percentage of correct replies.

Includes Transportation Course

The second week is devoted to sales. The salesman is familiarized with the problems of the dealer and how sales organizations are built up and function. The third week is given over to transportation engineering, and the fourth to a post graduate course on all work so that the salesman or dealer leaving the school will have firmly grounded the essentials of successful motor truck selling and merchandising in a way he will not forget. He will also be able to pass along this

MONTHLY INSPECTION

Selden Motor Trucks

SERVICE DEPARTMENT

Chassis No. 6008 **Mileage** 12204 **Date** June 22

Owner Keystone Lbr. Co. **Inspector** Chase

SPECIAL / REGULAR **Call** **Time** 1 **Hrs.** 0 **Min.**

Items Marked (X) Adjusted		Items Marked (O) Need Shop Attention	
MOTOR		**TRANSMISSION**	
Cylinders	OK	Oil Level	OK
Crank Case	OK	Case—Supports	OK
Suspension		Bearings Adj.	OK
Bearings	OK	Gear Shift	OK
Valves	OK	**STEERING ARRGT.**	OK
Compression	OK	Pivot Pins	OK
Push Rods	OK	Rods—Cross—Side	OK
Manifolds	OK	Steering Gear	OK
Oil Level	OK	**REAR AXLE**	OK
Oil Pump & Pipes	OK	Oil Level	OK
Oil Consumption	OK	Worm Bearings	OK
GOVERNOR		Worm Carrier Cap Screws	OK
Sealed	OK	**CHASSIS**	
RADIATOR	OK	Guards—Bumper	OK
Connections	OK	Universals Grease	
Water Pump	OK	Propeller Shaft	OK
Fan	OK	Radius Rods	OK
CARBURETTOR		Foot Brakes	OK
Miles per Gal. 9	OK	Hand Brakes	OK
Float Needle	OK	F. Springs	OK
Gas Tank—Feed Pipe	OK	R. Springs	OK
Choke	OK	Spring Bolts	OK
IGNITION	OK	Spring Clips	OK
Magneto—Type Eisman	OK	Wheels—Bearings	OK
Breaker Points	OK	Frame	OK
Switch	OK	**BODY**	OK
Plugs—Wiring	OK	Cab	OK
CLUTCH	OK	**HOIST**	OK
Throw-out Bearing Grease		Cylinder Pump	
Clutch Plates	OK	Clutch—Drive	
Adjustment	OK	Oil	
GREASE CUPS Neglected	0	Alemite Gun	

Condition of Truck:—

Governor Seal has been removed and should be replaced at once as the truck may be damaged by over-speeding.

Truck shows general lack of lubrication

Dealer

Signed by A. J. Crawford (OWNER) | Hogan (DRIVER)

Execute this Form in Quadruplicate—White copy for Owner—Pink for Dealer—Yellow for Driver—Blue to be mailed to Chief Inspector, Selden Truck Corporation, Rochester, N.Y.

White Form for Driver and Indicating Good Care of Truck

This form is also made in quadruplex, white, pink, yellow and blue for owner, dealer, driver and factory, respectively

schooling to members of its own organization with the result that all through the Selden selling organization there will be a bettering of sales methods that can not fail to benefit the company. This is a brief outline. All expenses to the factory as well as salaries will be paid the salesmen attending, for the Selden company realizes new salesmen cannot afford to lose four weeks' time.

Another dealer help inaugurated by the Selden company is an advisory council comprising eleven sales managers, general managers, salesmen, dealers, etc., representing every section of the United States.

The advisory council has chosen by a voting contest conducted in each of the eleven districts into which Selden sales territory is divided. The men who will form this council, chosen by votes, are as follows:

J. C. Conley, Boston; George E. Stewart, New York; H. A. Rayno, Albany; Carl W. Rothfuss, Williamsport, Pa.; H. C. Alexander, Charlotte, N. C.; W. Henry White, Atlanta, Ga.; Jos. G. Matias, Cincinnati, Ohio; J. R. Carnahan, Chicago, Ill.; W. I. Campbell, Wichita, Kan.; W. W. Grosser, Houston, Tex, and K. Nakagawa, Los Angeles.

These men will meet at the factory, with all expenses paid by the company, and the closer contact which will develop between dealers and manufacturers, and the better understanding of each others' problems that is sure to result, will be of vast benefit in merchandising Selden trucks.

These are some of the plans of the Selden company to bring about a closer contact with the dealer, to educate its dealers to become better business men.

A Dealer Cannot Mark Time

The truck dealer today is facing a period when he must go ahead. He cannot stand still. He either must progress or fail, for the year 1921, so students of economics say, will be a wonderful business year for **the business man who has a stable policy and shapes his policies to meet the new conditions.** The young truck dealer, and older ones for that matter, are daily being confronted by problems which the manufacturer can aid in solving. Closer contact between the factory, distributor and dealer, and a better understanding of each other's problems will do much to clarify the situation, and increase the sale of motor trucks.

To Make Service Tour

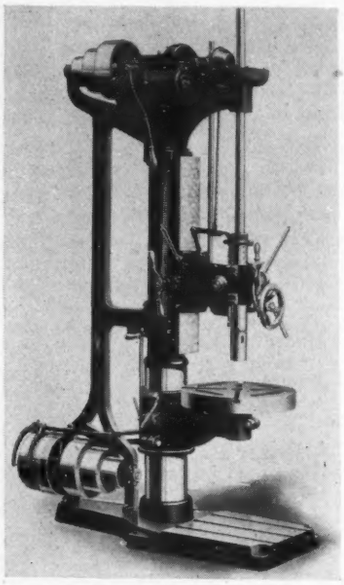
The National Automobile Dealers' Association is arranging a "sales and service" tour by P. E. Chamberlain, former general manager of the R. R. Hall Cadillac Company. of Denver. Chamberlain is to make a series of talks before dealers' associations at distribution centers on the relation of the automobile industry to community progress. In recent months Chamberlain has been in demand at meetings of automotive trades associations. His address "Selling Service Intelligently" has attracted wide-spread attention. The Detroit Automobile Dealers' Association is in touch with Mr. Chamberlain and proposes to bring him here at the earliest date possible.

Hinds County, Miss., accounts for its increase in land values from $25 five years ago to $100 and $150 as a result of improvement of roads and the use of motor trucks, according to the county supervisors.

Service Station and Repair Shop Appliances

Sibley Upright Drilling Machine

Several models of a new sliding-head drilling machine are being produced by the Sibley Machine Co., South Bend, Ind. The following description is that of the 24-in model of this line. The strongly braced base has T-slots for clamping the



Sibley Drilling Machine
This is a 24-in. heavy pattern with a sliding-head. It is for belt-drive and has tight and loose pulleys

work. The speeds and feeds are selective and a wide range is possible. The head and spindle are balanced by a weight supported inside the column. The gears are enclosed and belt guards can be furnished as special equipment.

All the drive shaft bearings are fitted with die-cast split bushings. They are interchangeable. The drive pulleys and cones are designed to carry wide belts, while the gears are made sufficiently strong to withstand severe duty. Spindle thrust is taken by a ball bearing. The sliding type back gears are closed and operated by a lever.

A feature of this machine is the geared feed which provides four changes and a neutral position. By manipulating a knob in the center of the handle feed changes are made. The gears in the lower feed box run in a bath of oil and are completely enclosed, as are also the worm gear and the steel worm.

Oil cups, grooves and channels provided at the various moving points, insure distribution of lubricant. Much attention has been paid to this phase of a drill's requirement in its designing.

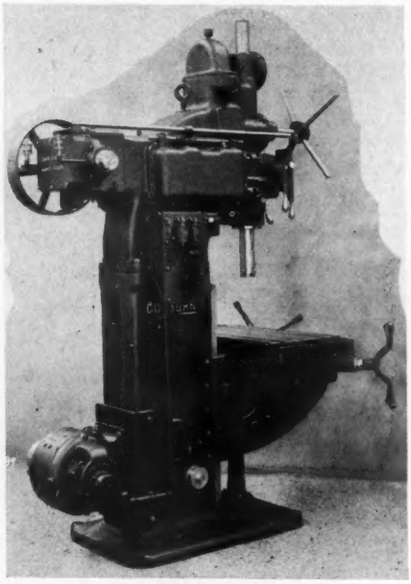
The diameter of the table is 21 in., and the maximum distance between spindle to table is 35½ in. The diam. of the spindle is 1⅝ in., diam. of the sleeve 3 in., and the feed of the spindle 10½ in. A No. 4 Morse taper hole is used in the spindle. The speed of the countershaft is 500 r.p.m., and the spindle speed is 29 to 495. This drilling machine occupies a floor space of 23 x 63 in. and weighs 1900 lb. It is 94 in. over all.

Colburn Drill Presses

Probably the most interesting model of the Colburn heavy duty drill presses, manufactured by the Colburn Machine Tool Co., Franklin, Pa., is the Standard. The feature of this type of Colburn drill press is the number of speeds and feeds which are quickly available, making it adaptable to a wide variety of work.

The doubled splined spindle is driven by beveled gears at its lower end where it is of largest diameter and closest to the drill or cutting tool, thus practically eliminating chance of torsional strain.

The manufacturing type is especially adaptable for machining duplicate parts.



Colburn Standard Type Drill Press
Has a large number of speeds and feeds and is adaptable for short runs on a variety of work

B & D Loadometer

The Loadometer, produced by the Black & Decker Mfg. Co., Towson Heights, Baltimore, Md., is an instrument that determines accurately and quickly whether the load being carried by a vehicle is over the maximum weight.

It is a portable instrument, which when placed under the rear axle, allows the truck to be jacked up by means of a screw jack mounted on a plunger.

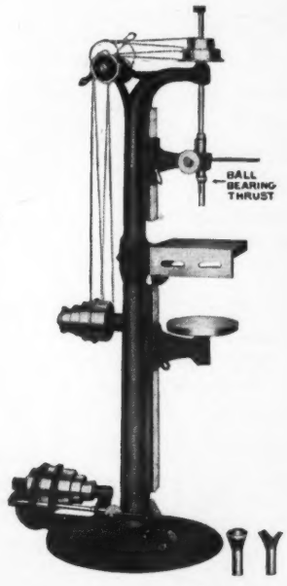
The base of the instrument is an oil-filled cylinder and any pressure transmitted through the plunger compresses the oil, which in turn indicates the pounds pressure on a high pressure gage connected to the oil chamber. The jack handles can be instantly detached, so that a pair of Loadometers can easily be carried without much occupying space.

Improved Stanley Sensitive Drill

The Stanley sensitive drill is built by the Francis Reed Co., Worcester, Mass. Its spindles are made of spindle steel, ground to size. Spindle thrust is taken on a ball bearing. The spindle driving pulley is mounted on a sleeve through which the spindle runs. This arrangement, it is said, produces a very sensitive spindle. Speed changes are accomplished by cone pulleys.

The base has been enlarged so that it now stands very rigidly. The countershaft is self-contained and may be detached from the base if the installation of a countershaft overhead is required. The countershaft is provided with oil holes to accommodate either the floor or overhead position.

Motors of ½ hp. are used, all wired, with switch, ready to connect. Specifications: Capacity ½-in. drill—ball bearing thrust on spindle; from center of spindle to column at square table, 7½ in.; from center of spindle to column at round table 6½ in.; maximum distance from square table to spindle, 11 in.; maximum distance from round table to spindle, 39 in.; vertical adjustment to head, 10 in.; vertical travel to spindle, 3 in.; hole in spindle, No. 1 Morse taper; size of cone pulleys, 3 in., 4 in., 5 in.; pulley on spindle, 3½ in. and 5½ in. diam. for 1½-in.



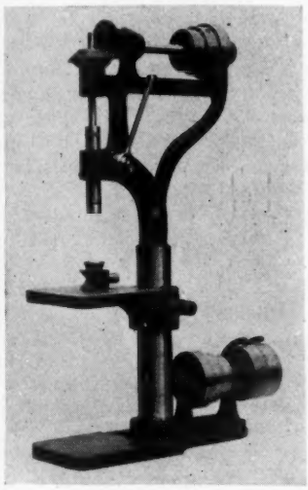
Improved Stanley Sensitive Drill
The spindle-driving pulley is mounted on a sleeve through which the spindle runs, thus eliminating pressure on the spindle from the driving belt.

belt; tight and loose pulley, 5 x 2 in.; square table, 11 x 11 in., swings around column and tilts to any angle; round table, 10 in. diam., base, 25 in. diam.; speed of countershaft, 900 r.p.m.; weight, 300 lb.; spindle speeds, 600 to 2400.

Champion Post Bench and Upright Drills

Various types of drills are being produced by the Champion Blower & Forge Co., Lancaster, Pa. These are made in different types, post drills, upright drills and power bench drills. Illustrated herewith are the Champion No. 97 post drill, 20-in. back-geared upright power drill and the Champion power bench drill No. 0. Others in the line that may be of interest to the garage and service stations are the Champion sensitive bench drill No. 50 and the Champion 14-in. upright power drill.

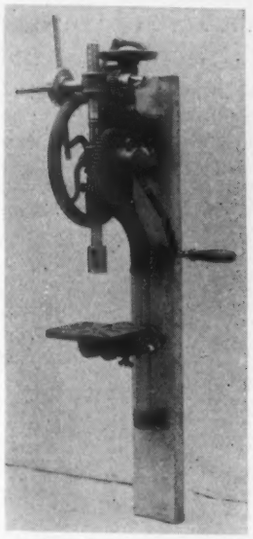
The 20-in. back-geared upright power drill, which will drill up to a 1½-in. hole, stands 75 in. over all, diam. of the column is 5¼ in., diam. of the table 16 in., and the spindle 1¼ in. It is supplied with tight and loose pulleys, also four step cone pulleys. This drill occupies a floor space 22 x 35 in. and requires 10 hp. to drive it. The net weight is 675 lb. The gears are machine-cut and the bearings are of generous size. Eight speeds are provided with three distinct and complete feeds, namely: power, wheel and lever feed. The spindle is counterbalanced by a weight suspended in the hollow column.



Power Bench Drill
It is 32 in. high, weighs 80 lb., and bores holes up to 5/16 in. diam.

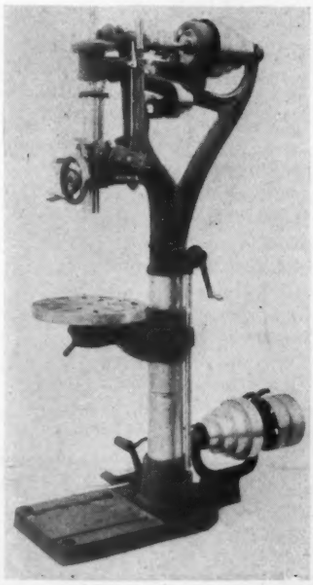
The Champion sensitive bench drill No. 50 is for light and rapid drilling. It is strong and well built and especially adaptable for use in garages, pattern and machine shops. It is driven by a belt and has two speeds. The countershaft has a belt shifter on the tight and loose pulleys. A ball thrust bearing is one of the features. The spindle has an up and down movement of 2½ in. The table is 8 in. in diam. This machine will drill a ⅜-in. hole to the center of a 10-in. circle. The height is 27½ in. and weight is 65 lb.

The Champion power bench drill No. 0 is also for light and rapid drilling. One of its features is that the top of the drill base is planed off to be used as a table when the regular drill table is turned to one side. This gives a space of 16 in. between the chuck and the base table. Attention is also called to the fact that the cone pulley is between two bearings. The countershaft has a belt shift on the tight and loose pulley. This drill will bore holes up to 9-16 in. with ease. It will drill to the center of a 9-in. circle and has an up and down feed of 3¼ in. The column diameter is 2½ in. and the spindle has a No. 1 Morse taper hole. The height over all is 32 in. and the weight 80 lb.



Champion Post Drill
It is a post drill with automatic self-feed and propeller hand-wheel feed

Another one of the Champion upright power drills is the 14-in. It is a gear-driven drill for belt power attachment. It is simple and easy to operate. The beveled gears are planed and the bearings are large, the upper being split so that wear can be taken up. The table can be tilted and clamped permanently at any angle. The height of this drill is 69 in., the distance from table to spindle 34 in. and from spindle to the base 45 in. The column is 4 in. diam. and the table is 11 in. square. The spindle diameter is ⅞ in. The floor space occupied by this equipment is 16 x 18 in. It requires 1 hp. The spindle hole is bored to fit a No. 2 Morse taper.

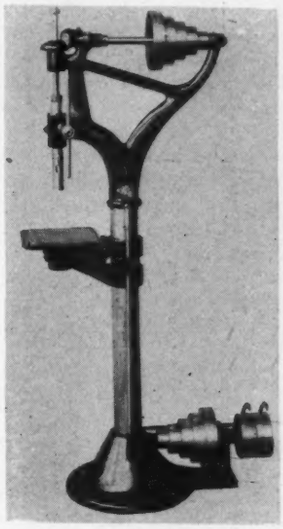


Added Upright Power Drill
This is known as a 20-in., back-geared, upright drill, and it stands 75 in. high and has a 5¼-in. column

The Champion post drill, illustrated herewith, is an automatic self-feed and propeller wheel hand-feed and quick return tool. It is equipped with end thrust ball bearings, the other bearings being ground out of the solid metal. This outfit will drill to the center of a 16½-in. circle and will drill holes from 0 to 1¼ in. The spindle is 1⅛ in. diam. and has an up and down run of 5½ in.

Rockford Drilling Machines

Several types of horizontal drilling machines are being produced by the Rockford Drilling Machine Co., Rockford, Ill. The drilling machine, a plain lever type, the model most applicable to the needs of a repairman or a service repair shop, is described in the following lines. This drill can also be had in the plain lever type with tapper. The column diameter is 4 in., and the cone pulleys have five steps.



Rockford Fourteen-Inch Drill
This belt-drive drill is furnished with round or square table

The countershaft has a speed of 600 r.p.m. and has tight and loose pulleys, 6-in. diam. for 2-in. belts. The over all height is 67½ in., and the floor space occupied is 19 x 30 in.

The regularly constructed feed is controlled by a plain lever. Beveled gears are used to drive the spindle, which are 15-16 in. diam. The hole in the spindle conforms to No. 2 Morse Taper. The swing will drill to center of 14 in. A square table is regularly supplied but a round table can be had if desired.

A geared tapping attachment can be supplied with any arrangement of feed. It is simply controlled. The reverse gears are disconnected when it is desired to use the machine for drilling. The weight of the machine is 260 lb.

Other popular models are the 20-in. drilling machine complete, which will drill to a center of 20¼-in. circle. Its column is 5½ in. diam. The spindle of this machine is 1¼ in. and the hole in the spindle conforms to No. 3 Morse.

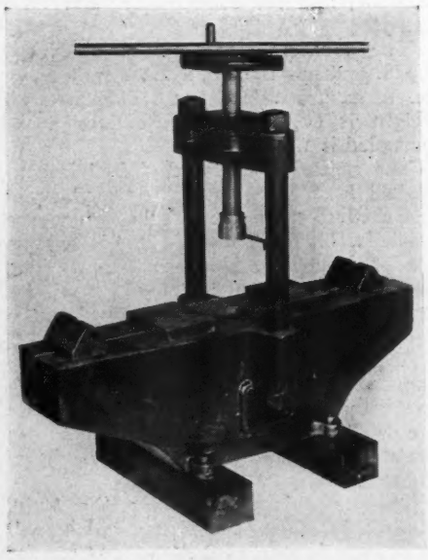
The 23-in. sliding-head drilling machine is another quite complete model and drills to center of 23 in. The spindle travel is 10 in. and the smallest diam. of the spindle is 1⅝ in. The hole in the spindle conforms to a Morse Taper No. 4. This model is designed for a belt 2¾ in. wide and requires 2½ hp. to operate.

Utility Screw Presses

A handy tool for the shop is the Utility screw press produced by Carl Pletz & Sons, Cincinnati, Ohio. It is made in two sizes, No. 3 and No. 3½. The 3½ press uses the same diameter screw excepting that it handles larger size work. This press straightens shafts, bars, rails, beams, etc. It also presses bushings in or out, gears or wheels on and off shafts and forms or bends metal in many shapes.

The bed of the No. 3½ model is 4 ft. long, is deep and heavily ribbed with a hole cored under the screw to permit work to drop through to the floor when pressed out. These cored holes permit the pressing of pieces on or off long shafts. Two capably strong upright posts withstand heavy loads. The screw is made of high-grade steel accurately chased to the end of which is fitted a steel pad. The up thrust is taken on a hardened steel and bronze washer. The hand wheel on the upper end of the screw is fitted so that the screw can be returned quickly. By using a 4 ft. bar in the hand wheel a pressure of about twenty tons can be transmitted to the object contacting with the steel pad.

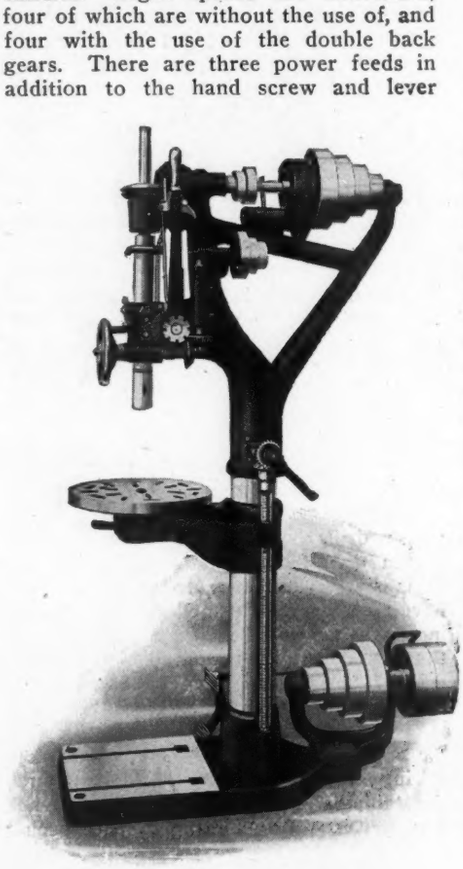
Specifications: No. 3, size of screw 2 in.; pitch, ¼ in.; distance between posts, 12¾ in.; distance under screw pad, 14 in.; length over all, 4 ft.; weight with screw down, 42 in.; weight, 500 lb. No. 3½, size of screw, 2 in.; pitch of screw, ¼ in.; distance between posts, 17¼ in.: distance under screw pad, 20 in.; length over all, 4 ft., height with screw down, 42 in.; weight, 600 lb.



Utility Screw Press
Used for straightening shafts, bars, rails, beams, to press bushing in or out, press gears or wheels on or off shafts, etc.

Hoosier Twenty-Inch Vertical Drilling Machine

The Hoosier Drilling Machine Co., Goshen, Ind., is offering to the trade a twenty-inch vertical drilling machine constructed according to the most modern and improved design. Such parts as the spur, bevel and worm gears, as well as the steel spindle rack and pinion, and the table elevating screw parts, are accurately machined and fitted. A wide range of speeds and feeds is provided to cover the diversity of work which this machine handles. Eight speeds are obtainable, four of which are without the use of, and four with the use of the double back gears. There are three power feeds in addition to the hand screw and lever feeds. The spindle, which is equipped with a high-grade ball thrust bearing, is counterbalanced by weight in the column, and has a quick return lever to facilitate rapid movement. The automatic stop attachment in connection with the graduated spindle sleeve assures the operator of accurate depth drilling and boring.



Hoosier Twenty-Inch Vertical Drilling Machine

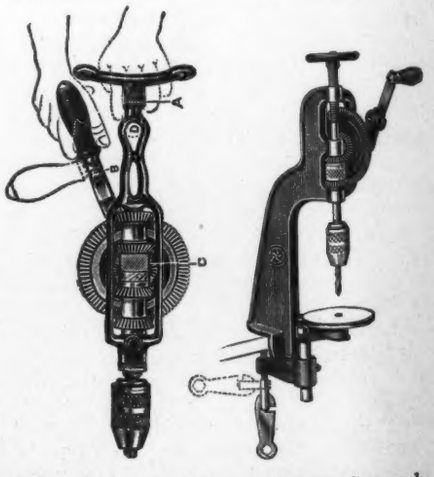
Specifications: Drills to center of 20 in.; distance from column to center of spindle, 10¼ in.; maximum distance spindle to table 27 in.; maximum distance spindle to base, 41¼ in.; minimum distance spindle to base, 32 in.; travel of spindle, 9¼ in.; smallest diam. spindle, 1¼ in.; spindle diam. bearing in sleeve, 1 7-16 in.; hole in spindle, Morse taper, No. 3; length of spindle sleeve, 9¾ in.; outside diam. spindle sleeve, 2¼ in.; diam. column at table arm, 5¼ in.; diam. table, 16 in.; travel of table on column, 18 in.; size of tight and loose pulleys, 8 in. x 2⅝ in.; size of cone pulleys (4-step) 4 5-16, 5 11-16, 7 3-16, 8⅝ in.; face of steps to cone pulleys, 2⅛ in.; speed of driving pulleys, 300 r.p.m.; number of feeds, 3; feed per revolution of spindle, .003, .005, .008 in.; number of spindle speeds, 8; range of spindle speeds, belt drive 90, 141, 228, 360; range of spindle speeds with back gears, 14, 25, 41, 65; diam. crown gear, 5.129 in.; back ratio, 5.57 to 1; diam. of crown pin, 3.213 in.; pitch of crown gear and pinion, 8; floor space required, 16 x 35 in.; distance floor to top of upper cone pulley, 70¾ in.; hp. required to operate, 1; net weight, 650 lb.; cone drive belt required, 11 ft. 1 in. x 2 in.; feed drive belt required, 30 in. x 1 in.

Millers' Bench, Hand and Breast Drill

Three of the most popular drills of the Millers Falls Co., Millers Falls, Mass., are the No. 210 bench drill, No. 1980 hand drill and No. 97 breast drill. The bench model is stated not only to be a thoroughly efficient tool but also a reasonably priced one, being listed at $15. It is equipped with a hand feed that is thoroughly adequate where the amount of drilling is not large and that is necessary for delicate work and where the speed of feeding has to be constantly under strict control. The speed of this tool can be instantly changed by turning a knurled sleeve having ratios from 1½ to 1 and 4 to 1.

This machine also has an extension crank from 3 to 6 in. radius. The three-jaw Star chuck with protected springs holds round shanks up to ½ in. The cast iron frame is unusually strong and three frame bearings hold the drill spindle and feed screw. A wrench is included to fit all nuts on the tool, the over all length of which is 24 in.; maximum height 9 in.

The model 1980 ratchet is a large sized drill with both a ratchet and change of speed. It takes round shank drills up to ⅜ in., so it can be used for many kinds of large drilling ordinarily done by a breast drill, as well as the smaller drilling usually done by a small hand drill. The hollow handle end is of mushroom shape to take the place of breast plate. Among mechanics and men whose work does not vary to a great degree this one size of tool can be utilized for practically every



Bench and Breast Drills Manufactured by the Millers Falls Co.

drilling purpose. The ratchet makes it possible to work in cramped places as the hollow end handle can be quickly detached. This drill will hold twist drills up to the full capacity of the chuck. No drills, however, are furnished with tool.

The ratchet is shifted from right to left, or vice versa, by giving a half turn to the cap of a small boss on the crank handle. The speed is changeable by moving a knurled barrel by pressure of the thumb and operates instantly without any manipulation of the crank. The gears are cut from steel and enclosed for protection. An equalizing bearing counteracts the outward thrust of the large gear, the ratio of which is the same as the Model 210 bench drill. This model is also equipped with a Star three-jaw chuck and holds drills up to 3/8 in. The springs in this chuck are located away down in the base where they cannot be reached by the shank of a drill and jammed or knocked out of place.

The illustration gives a good conception of the Model 97 ratchet breast drill. This drill is especially popular amongst automobile mechanics because of its straightening crank and continuous ratchet which makes it possible to work in practically any position. This drill has an easily adjusted ratchet that has five different actions: 1. The neutral position which gives the drill the ordinary direct drive ratchet action; 2. Ordinary right-hand action in which the chuck stops turning on the backward stroke of the handle; 3. Ordinary left-hand ratchet action; 4. Continuous right hand ratchet action in which the chuck turns continuously to the right on both the forward and backward strokes of the crank; 5. Continuous left-hand action.

The speed is instantly changeable without removing drill from the work by moving the knob on the crank handle. The gear ratios are even and 2¾ to 1. The fast and slow speeds have separate bearings. All the gears have cut teeth and the small gears are made of steel.

The fast and slow speeds are separated by bushings so that one will not directly drag on the other. The crank handle is adjustable for use as an ordinary crank or as a straight lever for ratchet action in cramped quarters or for putting greater power into the stroke and is easily switched from one position to the other by a half turn of the crank handle.

The breastplate is of special design to give a handhold for steadying the tool in awkward and out-of-the-way places. This action is performed simply by loosening a blind screw and turning the plate parallel to the large gear. It is in that position shaped to fit the hand and has a finger hole to give an extra grip. A large auxiliary breast plate is provided that can be easily clamped over the regular plate and gives greater comfort and power for doing heavy work.

This drill also has the three-jaw chuck of Star pattern well removed from any chance of jamming or being knocked out of place, and will take drills up to ½ in.

A New Preheating Furnace

Experience has taught that metal cannot be welded cold, because as the weld cools it contracts and pulls away from the cold metal in the casting, thus rendering the job useless. Consequently, some means of preheating had to be adopted. Charcoal fires have been most universally used. Charcoal at best is slow, and costly. It is expensive not only in price, but in its effect on the welders and the work they do. The fumes make it impossible for a man to do his best work. And the smoke is always an annoyance. Besides this, the castings are often unevenly heated, causing internal strains which result in cracks or breaks.

Proper preheating is one of the principal factors in reducing welding costs. It is claimed that the consumption or welding gases can be reduced at least 50 to 75 per cent where a good preheating medium is used.

A practical and satisfactory furnace for preheating is shown in the accompanying illustration. It consists of a deep box or oven, with detachable cover, mounted on a preheating table. The box is large enough to accommodate a block of six cylinders and other small parts at the same time. It is equipped with three sliding doors, enabling the operator to watch the work and see that it is not overheated. The inside of the box is lined with asbestos, which retains the heat, and the oven can be used for reheating after welding. The burners can then be turned off and castings allowed to cool slowly.

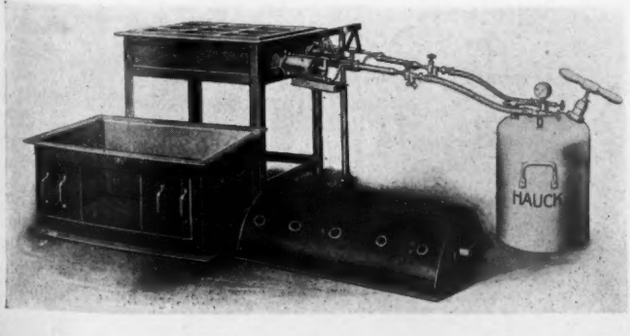
By removing the box and cover, the furnace is converted into a preheating table. The combustion chambers, through which the flames of the kerosene preheating burners travel, are lined with a patented type of refractory brick, which breaks the flame up into a number of small, soft, radiating flames. This is an important item in evenly and thoroughly distributing the heat to the castings or broken machine parts to be heated.

The furnace has been found invaluable for such work as welding gears, crankcases and other parts with comparatively large areas and of intricate formation. The even heating prevents cracking and avoids possibility of unequal expansion.

When soldering or welding aluminum crank-cases, the cover and box is not used. A small furnace of loose fire brick is built around the case and the flame of one of the preheating burners applied directly.

Frequently for unusually heavy cumbersome parts, the preheating can safely be confined to the break, without heating the entire casting. Loose fire bricks or sheet asbestos are used with one or two of the preheating burners. The table is then called into service, the part placed thereon and the work started.

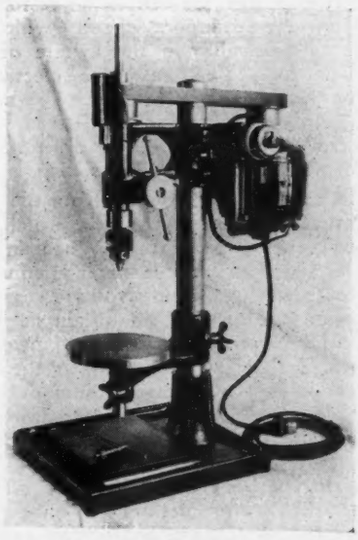
The burners shown are the so-called hand pump type, vaporizing kerosene oil as fuel. The manufacturer, the Hauck Manufacturing Co., Brooklyn, N. Y., states that this furnace is used in its welding department and has proved to be an indispensable piece of equipment.



New Preheating Furnace
It consists of an oven, with detachable cover, mounted on a table. The box will accommodate a block of six cylinders.

Motor-Driven Ball-Bearing Bench Drill

A handy bench drill, which will take drills up to ¼ in., is being manufactured by Harold G. Crane, 226 Cypress St., Brookline, Mass. The spindle of this drill is full-floating, being relieved of all belt strain. Large double annular ball bearings are used. The belt is tightened by means of thumb-screw adjustment. The vertical type motor, rated at 1750 r.p.m., can be operated from alternating or direct current of from 220 or 110 volts.



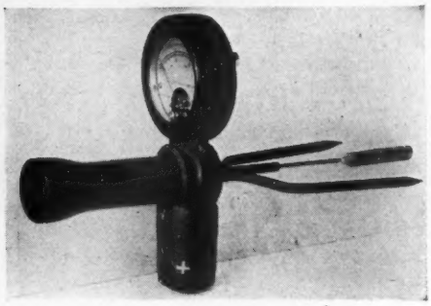
Crane Bench Drill
This motor-driven ball-bearing bench drill is well adaptable for service-station and garage work. The capacity is ¼ in.

The switch, which is on the side of the drill press, is equipped with a 10 ft. heavy cord and plug. The head with the motor attached can be lowered and swung through 180 deg., allowing the drill to clear the base.

The feed of the spindle is 2 in., maximum distance, chuck to movable table is 8 in. and to the fixed or square table 13½ in. The distance from the base of the column to the spindle is 4⅜ in., and the total height is 26 in. The base is 8¼ x 12½ in. Spindle speeds range from 1900 to 3000 r.p.m. Weight of outfit, 100 lbs.

Cadmium Test Device

The Quality Electrical Products Co., 907 East 15th St., Kansas City, Mo., is bringing to the attention of battery repair stations the features of its product, the cadmium test device. Most important of these is the fact that each set of readings is taken under the same contact conditions, through the elimination of wires, which do away with the necessity of the battery man learning the different combinations of contact.



Cadmium Test Device

By using this device in making tests it is only necessary to place the prongs on the terminal of the cell to be tested, allowing the cadmium metal, which is mounted movably in the handle of the device, to project into the electrolyte through the filler hole in cell. The act of projecting the cadmium stick into the electrolyte through the filler hole is taken care of automatically by a spring.

On the barrel projecting from the handle there is a rotary switch, which has three contact positions. When in the center position the volt meter is connected to the prongs giving voltage registrations on the meter. To obtain negative cadmium reading or reading of negative plates, the switch is turned to the left, and to obtain positive cadmium or positive plate reading, the switch is turned to the right. The three combinations or set of cadmium readings can be taken by the operator without taking his eye off the meter dial. This method not only saves a great deal of time, but allows a more accurate comparison of readings to be made. It also protects the instrument from being reversed, which has a tendency to damage the meter. In order to insure the prods being correctly placed, the positive prod is painted a bright red, which is universally understood to mean positive. The list price is $22.50.

Admiral Welding Outfit

The Admiral welding outfit, manufactured by the Admiral Welding Machine Co., 1607 Locust St., Kansas City, Mo., is regularly furnished with connections to fit the Linde oxygen tanks and Prest-O-Lite W. C. or W. K. acetylene tanks unless otherwise specified.

The parts of this equipment are as follows: 1 Admiral welding torch, 5 interchangeable tips, 1 carbon removing torch, 1 No. 29 regulator valve, 1 No. 31 regulator gage, 1 No. 59 regulator, valve, 1 No. 61 regulator gage, 1 3000-lb. oxygen high pressure gage, 12 ft. oxygen hose, 12 ft. acetylene hose, 4 hose clamps, 1 pair welder's glasses, 1 wrench, 1 instruction book, filler rods, fluxes, etc.

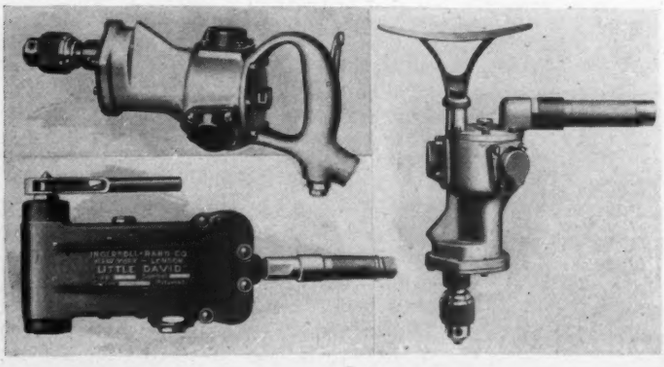
The filler rods include cast iron rods, genuine Swedish iron rods, vanadium steel rods, aluminum rods, manganese bronze rods, Tobin bronze rods and special bronze rods in various numbers, lengths and diameters. The equipment further includes 1 can pure aluminum flux, 1 can cast iron flux, 1 can brass and bronze flux, 1 can fireproof plastic and 1 can plastic binder. The equipment complete, without oxygen and acetylene cylinders, is $75.

Additions to "Little David" Drills

Three new drills have been added to the line of "Little David" pneumatic drills, produced by Ingersoll-Rand Co., 11 Broadway, New York City. No. 6, No. 600 and No. 8 close-quarter drills are the new units. The No. 6 and No. 600 drills have been developed to meet the demand for light-weight, high-speed machines for light work. They are designed to drill holes up to ⅜ in. diam. The features of these drills are freedom from vibration, and a closely graduated throttle for tap work.

The motor is of the three-cylinder-type, simply and accessibly constructed. The valve is made integral with the crankshaft and the cylinders are interchangeable. The motor runs in an oil bath and examination of the interior can be made by removing six cap screws. The difference between the No. 6 drill and the No. 600 is that the former has a pistol grip handle, with control through a thumb latch, and the No. 600 has a breast plate, case cover and a rolling type throttle handle. Standard equipment consists of a drill chuck wrench and one hose nipple. The No. 6 drill has a free speed of 2000 r.p.m at 90-lb. pressure, weighs 9 lb., length 13⅞ in., ½-in. hose. The No. 600 has the same speed, weighs 11½ lb., is 15 in. long, ½-in. hose.

The No. 8 close-quarter drill is small in size and suitable for use where the ordinary machine is too large. This machine will handle reaming or tapping up to 1¼ in. diam. One feature of this drill is that the spindle is operated by three rocking levers connected directly to the pistons through connecting rods. Another is that the motor has three cylinders with pistons operating at right angles to the levers. This movement is transmitted to the spindle by ratchet palls and is continuous, since one ratchet pall is always in contact with a tooth of the spindle.



New "Little David" Pneumatic Drills

The upper left illustration shows the No. 6. The lower illustration shows the No. 8 close-quarter drill. The one at the right the No. 600 drill.

Swivel Base Athol Vise

The Athol Machine Co., Athol, Mass., is offering the trade a vise known as the Athol, which incorporates a special construction to permit securing the vise in any desired position. The company claims that if this vise is once set it will remain put until desired in another position.

Swivel Base Athol Vise

The Athol line comprises vises from the simplest type to the new Starrett improved vise, shown herewith.

To secure this vise it is only necessary to turn the lever and loosen a taper block having corrugated sides that mesh in the corrugated slot. A clear conception of this operation may be had by glancing at the part-phantom view shown. It is claimed that it will not wear loose, will not stick, and cannot be started by any strain, no matter how severe.

Mid-Earth Mineral Soap

Mid-Earth soap, a product of the Mid-Earth Mfg. Co., Cleveland, Ohio, is a pure mineral soap claimed to have lather qualities. The manufacturer states that it cleans thoroughly and gives the hands a velvety softness. The basic ingredient used is pure cocoanut oil. It is also claimed to have effective healing qualities when lathered on the hands and allowed to dry.

Statistics show that 7,990,000 motor cars and trucks are now in service on the highways of the United States.

New York State showed a registration of 2,470 trailers in the Spring of 1920.

Replacement Table. Corrected Monthly

Including Piston Ring Sizes, Carburetor Sizes, Brake Lining Sizes and Truck Frame Dimensions

Note: Under Carburetor Inlet Diameter will be found either the size of the main air intake or the gasoline fuel line

Name, Model, Tonnage and Year	ENGINE				BRAKE LINING								FRAME	
	Piston Rings		Carburetor		Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Acason R-1—1920	4	1/4	1	.....	11 1/2	3	1/4	2	11 1/2	3	1/4	2	112	34
Acason RB-1 1/2—1920	4	1/4	1	.....	11 1/2	3 1/2	1/4	2	11 1/2	3 1/2	1/4	2	112	34
Acason H-2 1/2—1920	3	1/4	1 1/4	.....	13 1/2	3 1/2	1/4	2	13 1/2	3 1/2	1/4	2	130	35
Acason L-3 1/2—1920	3	1/4	1 1/4	.....	16	3 3/4	1/4	2	16	3 3/4	1/4	2	163 3/4	35
Acason M-5—1920	3	1/4	1 1/4	.....	18	4 1/2	1/4	2	18	4 1/2	1/4	2	167 1/2	35
Ace, Series A1 1/2—1920	3	1/4	1 1/4	1 1/16	12	3 1/4	1/4	4	12	3 1/4	1/4	4	122 1/2	32
Ace, Series A2 1/2—1919-20	4	1/4	1 1/4	1 1/16	13 1/2	3 1/4	1/4	4	13 1/2	3 1/4	1/4	4	144 1/2	32
Ace 3	4	1/4	1 1/4	1 1/16	51	2 1/4	1/4	2	51	2 1/4	1/4	2	144	32
Acme B-1—1916-20	3	1/4	1	.....	12	3 1/4	1/4	4	12	3 1/4	1/4	4	110 3/8	34
Acme F-1 1/2—1919-20	3	1/4	1	.....	12	3 1/4	1/4	4	12	3 1/4	1/4	4	124 3/8	34
Acme A-2—1916-20	3	1/4	1 1/4	.....	13	3 1/2	1/4	4	13	3 1/2	1/4	4	135 1/2	34
Acme C-3 1/2—1917-20	3	1/4	1 1/4	.....	15 1/2	3 3/4	1/4	4	15 1/2	3 3/4	1/4	4	150 1/2	36
Acme E-5—1919-20	3	1/4	1 1/2	.....	18	4	1/4	4	18	4	1/4	4	160	37
All-American A-1	3	1/4	1 1/16	2	45	2 1/2	1/4	2	43 1/16	2 1/4	1/4	2	104	31
All-American-1 1/2	.....	.....	1 1/16	2	45	2 1/2	1/4	2	43 1/16	2 1/4	1/4	2	116 7/8	34
All-American-2 1/2	.....	.....	1 1/16	2	.....	.....	.....	.....	.....	.....	.....	.....	Opt	34
Apex C-1	3	1/4	1	1	42	2	.....	2	41 1/2	2	.....	2	102	35 1/2
Apex D-1 1/2	3	1/4	1	1	42	2	.....	2	41 1/2	2	.....	2	102	35 1/2
Apex E-2 1/2	3	1/4	1	1 1/4	54	2 1/4	.....	2	53 1/4	2	.....	2	128	31 1/2
Armleder 20	4	1/4	1	1/4	11 1/2	3 1/4	1/4	4	11 1/2	3 1/4	1/4	4	104 1/4	32
Armleder KW 3 1/2—1916-20	4	1/4	1 1/4	1/4	42	3	1/4	1	16	3 3/4	1/4	8	150	36
Armleder HW 2 1/4—1916-20	4	1/4	1 1/4	1/4	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	140	32
Atco B-1 1/2	4	1/4	1	1	25 1/2	2 1/2	1/4	4	18	2 1/2	1/4	4		32
Atco A-2 1/2	4	1/4	1 1/4	1 1/4	25 1/2	2 1/2	1/4	4	18	2 1/2	1/4	4		33
Atco C-3 1/2	4	1/4	1 1/4	1 1/4	30	2 1/2	1/4	4	22 1/2	2 1/2	1/4	4		34
Atterbury 20R-1 1/2—1920	4	1/4	1	1/4	11 1/16	3 1/4	1/4	4	11 1/16	3 1/4	1/4	4	122 1/8	34
Atterbury 7CX-2 1/2—1919-20	3	1/4	1 1/4	1/4	13 1/16	3 1/2	1/4	4	13 1/16	3 1/2	1/4	4	133 3/8	34
Atterbury 7D-3 1/2—1917-20	3	1/4	1 1/4	1/4	15 5/16	3 3/4	1/4	4	15 5/16	3 3/4	1/4	4	145 5/8	37 1/2
Atterbury 8E-5—1919-20	3	1/4	1 1/2	1/4	17 11/16	4	1/4	4	17 11/16	4	1/4	4	157 1/4	37 1/2
Autocar XXI-F-2—1915-20	4	1/4	1 1/16	.....	16 3/4	2 1/2	1/4	4	13	2 1/2	1/4	4	91	34
Available H-1 1/2—1920	4	1/4	2 1/4	1 1/16	48	2 1/2	1/4	2	36	2 1/2	1/4	2	120	32
Available H2 1/2—1916-20	3	1/4	2 1/4	1 1/16	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	144	32
Available H3—1916-20	3	1/4	2 1/2	1 1/16	16	3 3/4	1/4	4	16	3 3/4	1/4	4	168	36
Available H5—1916-20	3	1/4	2 1/2	1 1/16	18	4	1/4	4	18	4	1/4	4	168	38
Available H7—1919-20	3	1/4	2 1/2	1 1/16	72	3 1/2	1/4	2	72	3 1/2	1/4	2	168	38
Avery 1-1920	3	1/8	.....	.....	.....	2 1/2	1/4	2	.....	.....	.....	.....	85	30
Beck-Hawkeye A-1—1912-20	.....	.....	1 1/2	1 1/4	24	2	1/4	1	24	2	1/4	1	114	54
Beck-Hawkeye B-1 1/2—1912-20	.....	.....	1 1/2	1 1/4	24	2	1/4	1	24	2	1/4	1	114	66
Beck-Hawkeye C-2—1912-20	.....	.....	1 3/4	1 1/2	25	2 1/4	1/4	1	25	2 1/4	1/4	1	114	66
Beck-Hawkeye D-3—1920	3	1/4	1 3/4	1 1/2	25	2 1/4	1/4	1	25	2 1/4	1/4	1	136	72
Bell E-1 1/2	4	1/4	1	1/4	39	2 1/2	1/4	1	48	3	1/4	1	114	34
Bell O-2 1/2	4	1/4	1 1/4	1/4	48	2 1/2	1/4	1	54	3	1/4	1	126	34
Belmont A-1	.....	.....	1	1 1/2	32	2	1/4	2	31	1 1/2	1/4	2	78	34
Belmont B-1 1/2	.....	.....	1	1 1/2	41	2	1/4	2	40	1 1/2	1/4	2	120	36
Belmont C-2	.....	.....	1	1 3/4	41	2 1/2	1/4	2	40	2	1/4	2	124	36
Bessemer G-1—1917-20	3	.....	1	1/4	47 1/2	2 1/2	1/4	2	45 1/2	2 1/4	1/4	2	98	34
Bessemer H2-1 1/2—1917-20	3	.....	1	1/4	56 1/2	2 1/2	1/4	2	55	2 1/4	1/4	2	116	34
Bessemer J2-2 1/2—1919-20	3	.....	1 1/4	1/4	56 1/2	2 1/2	1/4	2	55	2 1/4	1/4	2	141	34
Bessemer K2-4—1919-20	3	.....	1 3/4	1/4	58 1/2	3 1/2	1/4	2	30 1/4	4 1/2	1/4	1	157 1/2	38
Bethlehem K-1—1920	3	1/4	1	1/4	49	2	1/4	1	21	2	1/4	2	90	32 1/2
Bethlehem G-2—1920	3	1/4	1 1/4	1/4	43	2 1/2	1/4	1	40 1/4	1 3/4	1/4	2	120	34 1/2
Bethlehem H-3—1920	3	1/4	1 1/4	1/4	51	3	1/4	1	49	2	1/4	2	132	34 1/2
Bethlehem J-4—1920	3	1/4	1 1/4	1/4	55	3	1/4	1	50	2	1/4	2	156	34
Brinton F-2 1/2—1914-20	3	1/4	1 1/16	5/8	13	3 1/2	1/4	2	13	3 1/2	1/4	2	135 1/2	33
Brockway S2-1 1/2—1919-20	3	1/4	1	.....	20	2	1/4	4	20	2	1/4	4	118	32
Brockway K4-2 1/2—1919-20	3	1/4	1 1/4	.....	12	3 1/16	1/4	4	12	3 1/16	1/4	4	142	34
Brockway R2-3 1/2—1919-20	3	1/4	1 1/4	.....	15 1/16	3 3/4	1/4	4	15 1/16	3 3/4	1/4	4	176	36
Brockway T-5—1919-20	3	1/4	1 1/2	.....	18	4	1/4	4	18	4	1/4	4	176	36
Capitol H 2 1/2 and K2 1/2	.....	.....	1 1/16	1 1/16	57 1/2	2 1/2	1/4	1	42 1/2	2 1/2	1/4	1	132	34
Capitol G3 1/2	.....	.....	1 1/16	1 1/16	57 1/2	2 1/2	1/4	1	42 1/2	2 1/2	1/4	1	144	34
Chicago C1 1/2—1919-20	4	.....	1	1 1/2	12 1/16	3 1/4	1/4	4	12 1/16	3 1/4	1/4	4	123	32
Chicago C2 1/2—1919-20	4	.....	1 1/4	1 3/4	13 3/4	3 1/2	1/4	4	13 3/4	3 1/2	1/4	4	135	32
Chicago C3 1/2—1919-20	4	.....	1 1/4	1 3/4	16	3 3/4	1/4	4	16	3 3/4	1/4	4	180	36 1/4
Chicago D5—1920	4	.....	1 1/4	1 3/4	18	4	1/4	4	18	4	1/4	4	180	36 3/4
Climber A20	3	1/4	1	1 1/4	16	2 1/4	1/4	2	16	2 1/16	1/4	2	120	34
Clydesdale 120B-5—1919-1920	3	1/4	1 1/4	1/4	18	4	1/4	4	18	4	1/4	4	207	38
Clydesdale 90-3 1/2—1915-20	3	1/4	1 5/8	1/4	16	3 3/4	1/4	4	16	3 3/4	1/4	4	166 1/2	38
Clydesdale 65X-2 1/2—1919-20	3	1/4	1 1/4	1/4	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	137	33 1/4
Clydesdale 42-1 1/2—1919-20	3	1/4	1 1/4	1/4	12	3 1/4	1/4	4	12	3 1/4	1/4	4	117 1/2	34
Clydesdale 32X1—1919-20	3	1/4	1 1/4	1/4	20	1 3/4	1/4	4	20	1 3/4	1/4	4	117 1/2	34
Collier 18-1—1919-20	3	1/4	1	1/4	24	3 1/2	1/4	4	24	3 1/2	1/4	4	106	35 1/4
Collier 19-1 1/2—1919-20	3	1/4	1	1/4	24	3 1/2	1/4	4	24	3 1/2	1/4	4	120	32
Collier 21-2—1918-20	3	1/4	1 1/2	1/4	27 1/2	3 1/2	1/4	4	27 1/2	3 1/2	1/4	4	132	32
Collier 22-2 1/2—1919-20	3	1/4	1 1/2	1/4	27 1/2	3 1/2	1/4	4	27 1/2	3 1/2	1/4	4	144	32
Columbia G-2 1/2—1920	3	1/4	1 1/4	1 1/4	55	3	1/4	2	50	2	1/4	2	132	32 1/2
Columbia F-1—1919-20	3	1/4	1	1 1/16	39 1/4	2 1/2	1/4	2	40 1/2	1 3/4	1/4	2	108	32 1/2
Comet-1 1/2	4	1/4	1	1	17 1/4	2 1/4	1/4	2	17 1/4	1 1/2	1/4	2	100	36
Commerce T-1500	3	1/4	1	1/8	50	2	1/4	2	48 1/2	2	1/4	2	92 5/8	34
Commerce E 1, 1 1/2	3	1/4	1	1/4	45	2 1/2	1/4	2	43	2 1/4	1/4	2	92 5/8	34
Commerce EP 1 1/2, 2	3	1/4	1	1/4	45	2 1/2	1/4	2	43	2 1/4	1/4	2	99 5/8	34
Concord A-1 1/2—1920	3	1/4	1 1/4	1/4	12	3 1/4	1/4	4	12	3 1/4	1/4	4	110 1/4	32 1/4
Concord B-2 1/2—1920	3	1/4	1 1/4	1/4	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	124 5/8	32 1/4
Conestoga 12	3	1/4	1	1/4	39	2	1/4	1	39	2	1/4	1	86	34
Conestoga 20-1	3	1/4	1	1/4	22	2 1/2	1/4	2	14	2 1/2	1/4	2	96	32
Conestoga 30-2	3	1/4	1	1/4	22	2 1/2	1/4	2	14	2 1/2	1/4	2	120	32
Corbitt E-1—1917-20	3	1/4	1	1/4	19	2	1/4	2	19	2	1/4	2	105	34
Corbitt D-1 1/2—1916-20	3	1/4	1 1/4	1/4	45 1/4	2	1/4	1	45 1/4	2	1/4	1	120	34
Corbitt C-2—1915-20	3	1/4	1 1/4	1/4	51 1/2	2 1/4	1/4	1	51 1/2	2 1/4	1/4	1	138	35
Corbitt B-2 1/2—1916-20	3	1/4	1 1/4	1/4	51 1/2	2 1/4	1/4	1	51 1/2	2 1/4	1/4	1	138	35
Corbitt AA-5—1919-20	3	1/4	1 1/2	1/4	69 1/4	3	1/4	1	69 1/4	3	1/4	1	160	38
Corbitt A-3 1/2—1917-20	3	1/4	1 1/4	1/4	64	2 1/2	1/4	1	64	2 1/2	1/4	1	160	35
Couple Gear HC-3 1/2—1906-20	3	.....	2	1 3/4	48	3	1/4	2	.....	.....	.....	.....	168	42
Couple Gear AC-5—1908-20	3	.....	2	1 3/4	48	3	1/4	.....	.....	.....	.....	.....	168	42
Couple Gear LD-6—1917-20	3	.....	2	1 3/4	48	3	1/4	.....	.....	.....	.....	.....	168	42
Dart H-1—1920	3	1/4	1 1/4	1 1/16	19	1 3/4	1/4	4	19	1 3/4	1/4	4	102	34
Dart S-1 1/2—1920	3	1/4	1 1/4	1 1/16	19	1 3/4	1/4	4	19	1 3/4	1/4	4	112	34
Dart M-2 1/2—1920	3	1/4	1 1/4	1 1/16	10	2 1/2	1/4	2	19	3 1/2	1/4	4	124	34
Dart W-3 1/2—1920	3	1/4	1 1/4	1 1/16	28	2 3/4	1/4	4	28	2 3/4	1/4	4	144	38
Day-Elder A-1	3	1/4	1 1/4	1/4	19	2	1/4	4	19	2	1/4	4	108	35
Day-Elder B-1 1/2	3	1/4	1 1/4	1/4	19	2	1/4	4	19	2	1/4	4	119 3/4	35
Day-Elder D-2	3	1/4	1 1/4	1/4	45	2	1/4	2	45	2	1/4	2	125	35
Day-Elder C-2 1/2	3	1/4	1 1/4	1/4	52	2 1/4	1/4	2	52	2 1/4	1/4	2	125 3/4	35
Day-Elder F-3 1/2	3	1/4	1 1/2	1/4	56 1/2	2 1/2	1/4	2	56 1/2	2 1/2	1/4	2	148 1/4	35
Day-Elder E-5	3	1/4	1 1/2	1/4	69 1/2	3	1/4	2	69 1/2	3	1/4	2	155	37
Dearborn BW-2—1915-17-19-20	3	.....	1	.....	18	2 1/4	1/4	2	18	1 1/2	1/4	2	130	32
Dearborn F-1 1/2—1915-17-19-20	3	.....	1	.....	16 1/2	2 1/2	1/4	2	16 1/2	1 1/2	1/4	2	96 1/2	34
Dearborn C-1—1915-17-19-20	3	.....	3/4	.....	38	2	1/4	1	38	2	1/4	1	107	32
Defiance B-1 1/2—1918-19-20	3	1/4	1	.....	45	2 1/2	1/4	1	43 1/16	2 1/4	1/4	1	120	34
Defiance C-2—1918-19-20	3	1/4	1	.....	54 1/16	2 1/2	1/4	1	52 1/2	2 1/4	1/4	1	120	34
De Kalb E2	3	1/4	1 1/4	1 1/4	28	3 1/2	1/4	1	28	3 1/2	1/4	1	120	30
De Kalb E2 1/2	3	1/4	1 1/4	1 1/4	28	3 1/2	1/4	1	28	3 1/2	1/4	1	132	32
Denby 12-1—1920	3	1/4	1	1	43 1/2	2 1/2	1/4	1	39 1/2	1 3/4	1/4	1	98	34
Denby 134-2—1920	3	1/4	1	1	51 1/4	2 1/2	1/4	1	47	2	1/4	1	127	34
Denby 25-3—1920	3	1/4	1 1/4	1 1/4	55 3/4	3	1/4	1	51	2	1/4	1	127	34
Denby 27-4—1920	3	1/4	1 1/4	1 1/4	61 1/2	3	1/4	1	8 1/2	4	1/4	2	140	34
Denby 210-5—1920	3	1/8	1 1/4	1 1/4	89	2 1/4	1/4	1	8 1/2	4	1/4	2	140	34
Dependable C-1 1/2—1920	4	.....	1	.....	53 1/2	2 1/2	1/4	1	39 1/4	2 1/2	1/4	1	121	33
Dependable E-2 1/2—1920	4	.....	1	.....	62 7/8	2 1/2	1/4	1	48	2 1/2	1/4	1	152	33
Diamond T-FS&T-1 1/2	3	1/4	1	1 1/4	13 1/4	3 1/2	1/4	8	13 1/4	3 1/2	1/4	8	123 1/4	34
Diamond T-U-2	3	1/4	1	1 1/4	13 1/4	3 1/2	1/4	8	13 1/4	3 1/2	1/4	8	132	34
Diamond TK-3 1/2	3	1/4	1 1/4	1 1/2	16	3 3/4	1/4	8	16	3 3/4	1/4	8	145	37
Diamond T-EL-5	3	1/4	1 1/4	1 1/2	16	3 3/4	1/4	8	16	3 3/4	1/4	8	143	37

Replacement Table—Continued

Name, Model, Tonnage and Year	ENGINE				BRAKE LINING								FRAME	
	Piston Rings		Carburetor		Service				Emergency				Length	Width
	No. per cyl.	Width	Outlet Diameter	Inlet Diameter	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Diamond T-S-5	3	⅛	1¼	1¾	18½	4	¼	8	18½	4	¼	8	156⅜	37
Diehl A	3	....	1	1	28	2½	⅛	2	27	2	⅛	2	90	.....
Doane 2½—1917-18-19-20	3	⅛	1¼	⅛	35	3	¼	2	34	3	¼	4	126	53
Doane 3½—1920	3	¼	1¼	⅛	35	3	¼	2	34	3	¼	4	156	60
Doane 6.—1917-18-19-20	3	....	1½	⅛	38	3	¼	2	46	4	¼	4	168	64
Dodge Brothers-½—1917-20	3	⅛	1	⅛	19¼	2¼	⅛	2	14¾	1¾	⅛	2	47⅜	38
Dorris K4—4—1918-20	3	⅛	1¼	1¼	13½	3½	¼	4	13½	3½	¼	4	142¾	34
Dorris K7-3½—1919-20	3	¼	1¼	1¼	15¾	3¾	¼	4	15¾	3¾	¼	4	179½	36
Double Drive B 3	4	¼	1¼	1¾	29	2¼	¼	1	29	2¼	¼	1	124	36
Douglas GW-1½	3	....	1¼	⅛	45	2½	⅛	2	44	2¼	⅛	2	118	31
Douglas G-1½	3	....	1¼	⅛	46	2½	⅛	2	44	2¼	⅛	2	118	31
Douglas H-2	3	....	1¼	⅛	55	2½	⅛	2	52	2¼	⅛	2	118	31
Douglas HW-2	3	....	1¼	⅛	54	2½	⅛	2	42	2¼	⅛	2	118	31
Douglas I-3	3	....	1¼	⅛	58	2½	⅛	2	44	2¼	⅛	2	132	31
Duplex E-3½	3	¼	1¼	1	9½	2½	¼	2	5½	2½	¼	2	126	39⅜
Duplex A	....	....	1¼	1½	....	2	....	4	....	2	....	4	121	34
Duty 2-1920	3	⅛	1½	1¾	45	2½	⅛	1	40	1¾	⅛	1	123	44
Eagle 100-2	4	¼	1	1¼	49½	3	¼	1	47¼	2	¼	1	Opt	36
Ellsworth 25A-½—1918-20	3	⅛	1¼	1¼	12	1¼	¼	4	12	1¼	¼	4	Opt	36
Elmira C1½-½	....	....	1	1¼	24	1	⅛	1	24	1	⅛	1	60	30
Fageol 1½—1920	3	¼	1	1½	19¼	1¾	⅛	2	19¼	1¾	⅛	2	120	30
Fageol 2½—1917-20	3	¼	1	1¼	13¼	3½	¼	2	13¼	3¼	⅛	2	135	34
Fageol 4500.—1917-20	3	¼	1½	2	15½	3¾	¼	2	15½	3¾	⅛	2	161¼	37¾
Fageol 5300.—1917-20	3	¼	1⅝	2	18	4	⅛	2	18	4	⅛	2	161¼	37¾
Famous B10-1—1919-20	3	⅛	1	⅛	21	2¼	¼	1	48	2	⅛	2	94	34
Famous B12-1¼—1919-20	3	⅛	1	⅛	21	2½	¼	1	48	2	⅛	2	94	34
Fargo O17, P18-2, P19-2, P20-2	3	⅛	.....	1⅜	52	3	⅛	2	50½	2	⅛	2	132	33
Federal SD-1	4	⅛	1	⅛	10	3	¼	4	10	3	¼	4	112	34
Federal TE-1½	3	⅛	1¼	1½	13	3½	¼	4	13	3½	¼	4	118	34
Federal UE-2	3	⅛	1¼	1½	13	3½	¼	4	13	3½	¼	4	134	34
Federal WE-3½	3	⅛	1¼	1½	15⅝	3¾	¼	4	15⅝	3¾	¼	4	154	38
Federal XE-5	3	⅛	1¼	1½	17	4	¼	4	17	4	¼	4	154	38
Federal Light Duty	3	⅛	1¼	1½	13	3½	¼	4	13	3½	¼	4	86	34
Federal Heavy Duty	3	⅛	1¼	1½	15⅝	3¾	¼	4	15⅝	3¾	¼	4	82	38
Ford T-1	3	¼	1.06	1⅛	23	1⅛	⅛	1	12	1⅜	⅛	2	124	23
Front-Drive C1½	4	⅛	1	1½	13	3	¼	2	15	3	¼	2	124	36
F.W.D. B-3	3	¼	1	⅛	27	3½	¼	1	43	2¾	¼	2	136	36
Garford 25-1¼—1920	3	⅛	1½	.....	11¾	3¼	¼	4	11¾	3¼	¼	4	108	34
Garford 70H-2—1920	4	⅛	1½	.....	13	3½	¼	4	13	3½	¼	4	121	34
Garford 77D-3½—1920	4	⅛	1½	.....	15⅝	3¾	¼	4	15⅝	3¾	¼	4	144	36
Garford 77C-3½—1920	3	⅛	1½	.....	15⅝	3¾	¼	4	15⅝	3¾	¼	4	150	32
Garford 68-5—1920	3	⅛	1¾	.....	10½	4	⅛	2	21⅝	4	¼	4	150	32
Gary I-1¼	4	⅛	1¼	⅛	24	3¼	¼	2	24	3¼	¼	2	120	34
Gary J-2½	4	⅛	1¼	⅛	27	3½	¼	2	27	3½	¼	2	120	34
Gary K-3½	4	⅛	1¼	⅛	32	3¾	¼	2	32	3¾	¼	2	148	36¾
Gary M-5	4	⅛	1½	⅛	36½	4	¼	2	36½	4	¼	2	168	39
Gersix K-2½—1920	3	¼	1¼	1½	20	2½	¼	4	47	2¼	¼	2	131	34
Gersix M-1½—1920	3	¼	1¼	1½	46	2	¼	2	46	2	¼	2	114	32
Giant 15-1	3	⅛	1	.....	19	2	⅛	4	19	2	⅛	4	116½	32
Giant 16-2	3	⅛	1¼	.....	45½	2	⅛	2	45½	2	⅛	2	140½	33
Giant 17-3½	3	⅛	1½	.....	56½	2½	¼	2	46½	2½	¼	2	183½	36
G.M.C. 16-¾—1916-20	3	⅛	1	1	40	1⅞	⅛	2	43	1⅞	⅛	2	92½	34
G.M.C. 31A-1½—1915-20	3	⅛	1	1	13	3½	¼	4	13	3½	¼	4	101	33
G.M.C. 31B-1½—1915-20	3	⅛	1	1	13	3½	¼	4	13	3½	¼	4	125	33
G.M.C. 41A-2—1915-20	3	⅛	1	1	13	3½	¼	4	13	3½	¼	4	125⅜	33
G.M.C. 41B-2—1915-20	3	⅛	1	1	13	3½	¼	4	13	3½	¼	4	149¾	33
G.M.C. 71A-3½—1916-20	3	⅛	1¼	1¼	15⅝	3¾	¼	4	15⅝	3¾	¼	4	144	38
G.M.C. 71B-3½—1916-20	3	⅛	1¼	1¼	15⅝	3¾	¼	4	15⅝	3¾	¼	4	192	38
G.M.C. 101A-5—1916-20	3	⅛	1¼	1¼	17	4	¼	4	17	4	¼	4	144	38
G.M.C. 101B-5—1916-20	3	⅛	1¼	1¼	17	4	¼	4	17	4	¼	4	192	38
Gramm-Bernstein 15-1½—1920	3	⅛	1	1½	48½	2	⅛	2	46½	2	⅛	2	120	32
Gramm-Bernstein 65-1½—1920	3	⅛	1	1½	18	1¾	⅛	2	18	1¾	⅛	4	120	32
Gramm-Bernstein 20-2—1920	3	⅛	1¼	1½	22½	2	⅛	4	22½	2	⅛	4	126	32 ⅛
Gramm-Bernstein 25-2½—1920	3	⅛	1¼	1½	22½	2¼	¼	4	22½	2¼	¼	4	132	36
Gramm-Bernstein 35-3½—1920	3	¼	1¼	1½	26	2¾	¼	4	26	2¾	¼	4	144	36
Gramm-Bernstein 50-5—1920	3	¼	1½	1¾	32½	2¾	¼	4	32½	2¾	¼	4	162	36
Grant 17A—1920	3	⅛	1⅛	.....	45	2½	⅛	2	43	2½	⅛	2	131⅞	35⅛
Hall 2-Worm-2¼	3	⅛	.....	.....	13½	3½	⅛	2	13½	3½	¼	2	144	38
Hall 3½-Worm	3	⅛	.....	.....	16	3¾	¼	2	16	3¾	¼	2	180	39
Hall 5-Worm	3	⅛	.....	.....	18½	4	¼	2	18½	4	¼	2	144	39
Hall 7-Chain	3	⅛	.....	.....	37	2½	⅛	1	59	4	¼	1	180	39
Harvey WEA-1½—1919-20	4	¼	.....	.....	46	2	¼	2	46	2	¼	2	120	32
Harvey WFA-2½—1919-20	4	¼	.....	.....	52	2¼	¼	2	52	2¼	¼	2	126½	32
Harvey WHA-3½—1919-20	4	¼	.....	.....	56	2½	¼	2	56	2½	¼	2	144	35
Harvey WKA-5—1919-20	4	¼	.....	.....	69	3	⅛	2	69	3	⅛	2	144	35
Hawkeye K-1½—1918-20	4	⅛	1¼	1½	48	2	¼	2	47	1½	⅛	2	112	34
Hawkeye M-2—1919-20	4	⅛	1¼	1½	54	2½	⅛	4	52	2	⅛	4	112	34
Hendrickson I-2½	3	¼	1¼	⅛	12	3½	⅛	4	12	3½	⅛	4	Opt	32½
Hendrickson J-3½	3	¼	1¼	⅛	16	3¾	⅛	4	16	3¾	⅛	4	Opt	36
Hendrickson K-5	3	¼	1½	⅛	18	4	⅛	4	18	4	⅛	4	Opt	38
Highway-Knight A	4	¼	1½	1¾	57	2½	¼	1	57	2½	¼	1	150	38
Highway-Knight B-5	4	¼	1½	1¾	69	3	¼	1	69	3	¼	1	150	38
Higrade A18-1—1918-19	3	¼	1	1	12	1½	¼	2	12	1½	¼	2	85	32
Higrade B20-1½—1919-20	3	¼	1½	1½	18	2	¼	2	18	2	¼	2	100	32
Hood C	3	⅛	1	¼	23	1	⅛	1	23	2½	⅛	2	30	23
Hoover 15B-1	3	⅛	1	1¾	16	1¾	⅛	2	16	1¾	⅛	2	82	35½
Hoover 20A-1½	3	⅛	1	1¾	19	2	⅛	2	19	2	⅛	2	105	33
Huffman B-1½—1919-20	3	⅛	1	⅛	44	2¼	⅛	2	44	1½	⅛	2	123	32
Huffman C-1½—1919-20	3	⅛	1	⅛	46	2½	⅛	2	44	2¼	⅛	2	123	32
Hurlburt A1½-2	3	....	1¼	1	22	2	¼	2	22	2	¼	2	132	35½
Hurlburt B2½	3	⅛	1¼	1	24	2½	¼	2	23	2½	¼	2	154	34
Hurlburt C3½-4	3	¼	1½	1¼	26	3	¼	2	25	3	¼	2	144½	34
Hurlburt D5-5½	3	¼	1½	1¾	28	3	¼	2	27	3	¼	2	144½	34
Indiana 12-1¼—1920	3	¼	1	.....	17½	2	⅛	8	17½	2	⅛	8	108	32
Indiana 20-2—1920	3	¼	1¼	.....	44	2	¼	4	44	2	¼	4	126	33
Indiana 25-2½—1920	3	¼	1¼	.....	51	2¼	¼	4	51	2¼	¼	4	138	33
Indiana 35-3½—1920	3	¼	1¼	.....	56	2½	¼	4	56	2½	¼	4	144	34½
Indiana 51-5—1920	3	¼	1½	.....	68	3	¼	4	68	3	¼	4	156	37½
International H-¾—1916-20	3	¼	1¼	1¾	43¾	2¼	⅛	2	43⅜	2¼	⅛	2	75	34
International F-1—1916-20	3	¼	1¼	1¾	43¾	2¼	⅛	2	43¾	2¼	⅛	2	88	34
International K-1½—1918-20	3	¼	1¼	1¾	50⅝	2¼	⅛	2	50⅝	2¼	⅛	2	92	34
International G-2—1918-20	4	¼	1¼	1¾	50⅝	2¼	⅛	2	50⅝	2¼	⅛	2	118	34
International L-3½—1920	4	¼	1¼	1¾	73	2½	⅛	2	73	2½	⅛	2	147⅜	34
Jackson B-3½	3	⅛	1¼	1½	58½	3½	¼	2	....	....	....	....	150	36
J and J-D2—1920	3	....	1½	⅜	50	3	¼	2	50	2½	¼	2	80	32
Jumbo 15-1½—1919	4	¼	.....	1	48½	2	⅛	2	47	1½	⅛	2	120	32
Jumbo 20-2—1919	4	¼	.....	1	48½	2	⅛	2	47	1½	⅛	2	120	32
Jumbo 25-2½—1917-19	3	¼	.....	1¼	49¾	3	⅛	2	47½	2½	⅛	2	116	34
Jumbo 30-3—1917-19	3	¼	.....	1¼	49¾	3	⅛	2	47½	2½	⅛	2	116	34
Jumbo 35-3½—1919	4	¼	.....	1¼	60½	3	⅛	2	58½	2½	⅛	2	144	36
Jumbo 40-4—1919	4	¼	.....	1¼	60½	3	⅛	2	58½	2½	⅛	2	144	36
Kalamazoo G-1½	3	¼	1	1	50	2½	⅛	1	....	2½	⅛	1	120	32½
Kalamazoo H-2½	3	¼	2	1	90	2½	⅛	1	48	2½	⅛	1	144	33
Kalamazoo K-3½	3	¼	2	1	60	2½	⅛	1	60	2½	⅛	1	152	36
Kankankee E-2½—1919-20	3	¼	1	1¼	50	3	⅛	1	46½	2	⅛	1	148½	32
Karavan A-2½	4	¼	1	1	51	2¼	⅛	1	51	2¼	⅛	1	132	33
Kearns H-¾	....	....	....	....	42	2	⅛	1	42	2	⅛	1	90	34
Kearns N-1½	....	....	....	....	45	2½	⅛	1	45	2¼	⅛	1	120	34
Kelly-Springfield K31-1½	4	¼	1	⅛	16¾	1⅞	⅛	4	16¾	1⅞	⅛	4	141	34
Kelly-Springfield K34-1½	4	¼	1	⅛	42⅜	2	¼	2	42⅜	2	¼	4	141	34
Kelly-Springfield K35-2½	4	¼	1	⅛	16¾	1⅞	⅛	4	16¾	1⅞	⅛	4	141	34
Kelly-Springfield K36-2½	4	¼	1	⅛	48⅞	2¼	¼	2	48⅞	2¼	¼	4	141	36
Kelly-Springfield K40-3½	4	¼	1¼	⅛	21	2⅛	⅛	4	21	2⅛	⅛	4	145	38
Kelly-Springfield K41-3½	4	¼	1¼	⅛	3	4½	¼	12	58	2½	⅛	2	144	36
Kelly-Springfield K42-3½	4	¼	1¼	⅛	27½	2¾	¼	8	27½	2¾	¼	4	144	36
Kelly-Springfield K45-4	4	¼	1¼	⅛	21	2⅛	⅛	4	21	2⅛	⅛	4	145	38
Kelly-Springfield K50-5	4	¼	1¼	⅛	21	2⅛	⅛	4	21	2⅛	⅛	4	145	38
Kelly-Springfield K60-6	4	¼	1¼	⅛	21	2⅛	⅛	4	21	2⅛	⅛	4	145	38
Keystone 40-2—1919-20	3	¼	1	⅛	50½	3	⅛	1	46¾	2	⅛	1	124	33
Kimball AB-1½	3	¼	1¼	.....	50	2¼	¼	4	33	3½	¼	1	135	34
Kimball AC-2½	3	¼	1¼	.....	52	2½	¼	4	33	3½	¼	1	152	34
Kimball AK-3	3	¼	1½	.....	52	2½	¼	4	33	3½	¼	1	152	34
Kimball AE-4	3	¼	1½	.....	58	3	¼	2	58	3	¼	2	171	36
Kimball AF-5	3	¼	1½	.....	65	3	¼	2	65	3	¼	2	171	36
King-Zeitler 1½—1919-20	3	⅛	1	1¼	48	3¼	¼	4	48	3¼	¼	4	Opt	32
King-Zeitler 2½—1919-20	3	⅛	1	1¼	54	3½	¼	4	54	3½	¼	4	Opt	32
King-Zeitler 3½—1919-20	3	⅛	1¼	1¼	64	3¾	¼	4	63	3¾	¼	4	Opt	36
Kissel-Utility-1½—1917-20	3	⅛	.....	1¼	19	2	⅛	4	19	2	⅛	4	120	34

Kissel-Freighter-2—1917-20	3	¾	.....	1¼	14	3½	¼	4	14	3½	¼	4	144		34
Kissel-Heavy-Duty-3½—1917-20	3	¾	.....	1¼	56	2½	¾	2	56	2½	¾	2	156		36
Kissel-Goliath-5—1919-20	3	¾	.....	1¼	56	2½	¾	2	56	2½	¾	2	168		36
Kleiber 1	3	¾	1¼	1¼	12	3½	4	4	12	3½	¼	4	120		34
Kleiber 1½	3	¾	1¼	1¼	45	2	4	2	45	2	¼	4	132		34
Kleiber 2	3	¾	1¼	1¼	13½	3½	4	4	13½	3½	¼	4	144		34
Kleiber 2½	3	¾	1¼	1¼	52	2¼	4	2	52	2¼	¼	4	150		38
Kleiber 3½	3	¾	1¼	1¼	16	3¾	4	4	16	3¾	¼	4	156		34
Kleiber 5	4	¼	1½	1¾	18	4	4	4	18	4	¼	4	168		38
Knox 35—1915-20	4	¼	1½	1½	.....	.....	.....	.....	57¾	6½	¼	1	27	⅛	28
Knox 36-3—1915-20	4	¼	1½	1½	.....	.....	.....	.....	57¾	6½	¼	1	96	¼	28
Koehler C 1¼—1919-20	3	¾	1	¼	47	2½	¾	2	46	2¼	¾	2	108		34
Koehler M 2½—1919-20	4	¼	1¼	¾	13½	3½	¼	4	13½	3½	¼	4	144		34
Lange-2	3	¾	1	1⅛	30	2	¼	2	18	3	¼	4	114		37
Larrabee-Deyo U-1½—1919-20	3	¾	1	.....	48	2	¼	2	48	2	¼	2	108		34
Lar.-Deyo A,B '18-19 & L-'20-3½	3	¾	1¼	.....	60	2½	¼	2	60	2½	¼	2	168		36
Lar.-Deyo C, D'18-19 & K'20-2½	3	¾	1¼	.....	54	2¼	¼	2	54	2¼	¼	2	150		36
Larrabee-Deyo W-5—1920	3	¾	1½	.....	72	3	¼	2	72	3	¼	2	152		36
Larrabee-Deyo T—1918-19	3	¾	1½	.....	72	3	¼	2	72	3	¼	2	157		36
L. M. C.-2½—1919-20	3	¾	1¾	1½	55	3	¾	2	50½	2	¾	2	143		32
Lombard 140H.P.	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	120		79
Lombard 50 H.P.	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	79		64
Luedinghaus K2—1919-20	3	¼	1¼	1	53.4	2½	¼	2	38½	2½	¼	2	120		34
Luedinghaus K2-LS—1920	3	¼	1¼	1	53.4	2½	¼	2	38½	2½	¼	2	145½		34
Luverne BBL-2	3	¾	1¼	1¼	.....	2½	¼	2	.....	2½	¼	2	108		34
Maccar L-1½—1915-19	3	¾	1¼	⅝	11	3¼	¼	4	11	3¼	¼	4	128½		34
Maccar H-2½—1915-20	3	¾	1¼	⅝	13	3½	¼	4	13	3½	¼	4	143⅝		34
Maccar M-3¼—1915-17-19-20	3	¾	1¼	⅝	15¼	3¾	¼	4	15½	3¾	¼	4	155⅞		34
Maccar G-5—1919-20	3	¼	1½	⅝	17¾	4	¼	4	17¾	4	¼	4	167		37½
Mack AB 1½, 2 Ton-Chain '16-20	4	¼	1¼	¼	12¼	4	¼	2	16½	2½	¼	4	Opt		33¼
Mack AB 1½, 2 Ton-Worm '16-20	4	¼	1¼	¼	12¼	3½	¼	4	13¼	3½	¼	4	Opt		33¼
Mack AB-Tractor 5 Ton—'16-20	4	¼	1¼	¼	12¼	4	¼	2	16½	2½	¼	4	77		33¼
Mack AC 3½ to 7½ Ton—'16-20	4	¼	1½	¼	16½	3	¼	4	20½	3½	¼	4	Opt		37½
Mack AC Trac. 7to15Ton—'16-20	4	¼	1½	¼	16½	3	¼	4	20½	3½	¼	4	87		37½
Master JI-1½—1919-20	3	¾	1¼	2	74½	2½	⅛	1	74½	2¼	¼	1	117¾		34½
Master JW-1½—1919-20	3	¾	1¼	2	12	3¼	¼	2	12	3¼	¼	2	117¾		34½
Master M-2½—1916-20	3	¼	1¼	2	74½	2½	⅛	1	74½	2¼	¼	1	117⅜		34
Master O-2½—1917-20	3	¼	1¼	2	74½	2½	⅛	1	74½	2¼	¼	1	156⅜		34
Master W-2½—1916-20	3	¼	1¼	2	13¼	3½	¼	2	13¼	3½	¼	2	117⅜		34
Master WL-2½—1917-20	3	¼	1¼	2	13¼	3½	¼	2	13¼	3½	¼	2	156⅜		34
Master D-2½—1920	3	¼	1¼	2	8⅝	4½	⅛	2	54	3	⅛	2	117⅜		34
Master DL-2½—1920	3	¼	1¼	2	8⅝	4½	⅛	2	54	3	⅛	2	156⅜		34
Master T-6 Tractor—1917-20	3	¼	1¼	2	74½	2½	⅛	1	74½	2¼	¼	1	72½		34
Master A-3½—1918-20	4	¼	1½	1¾	16	3¾	¼	2	16	3¾	¼	2	147¾		36¾
Master AL-3½—1918-20	4	¼	1½	1¾	16	3¾	¼	2	16	3¾	¼	2	183¾		36¾
Master E-3½—1920	4	¼	1½	1¾	11	6	¼	2	25	4	¼	4	147¾		36¾
Master EL-3½—1920	4	¼	1½	1¾	11	6	¼	2	25	4	¼	4	183¾		36¾
Master B-5—1919-20	4	¼	1½	1¾	18	4	¼	2	18	4	¼	2	162⅞		39
Master BL-5—1919-20	4	¼	1½	1¾	18	4	¼	2	18	4	¼	2	186⅞		39
Master F-5—1920	4	¼	1½	1¾	11	6	¼	2	25	4	¼	4	162⅞		39
Master FL-5—1920	4	¼	1½	1¾	11	6	¼	2	25	4	¼	4	186⅞		39
Maxwell 1½1917-20	3	¾	1	1	16	1¾	¾	4	16	1¾	¾	4	102		36
Menominee HT-1—1918-20	3	¾	1	1½	12	3¾	¼	8	.....	.....	.....	.....	104		32
Menominee H-1½—1916-20	3	¾	1¼	1¾	13½	3½	¼	8	.....	.....	.....	.....	122		32
Menominee D-2—1915-20	3	¾	1¼	1¾	13½	3½	¼	8	.....	.....	.....	.....	146		32
Menominee G-3½—1916-20	3	¼	1½	2	16	3½	¼	8	.....	.....	.....	.....	155		36
Menominee J-5—1917-20	3	¾	1½	2	18½	4	¼	8	.....	.....	.....	.....	156		38
Menominee Ht-1—1920-late	3	¾	1	1½	47	2½	¾	2	33¼	2½	¾	2	104		32
Menominee H-1—1920-late	3	¾	1¼	1¾	47	2½	¾	2	33¼	2½	¾	1	122		32
Menominee D-2—1920-late	3	¾	1¼	1¾	57½	2½	¾	2	42½	2½	¾	2	146		32
Menominee G-3½—1920-late	3	¼	1½	2	57½	2½	¾	2	42½	2½	¾	2	155		36
Menominee J-5—1920-late	3	¾	1½	2	69	3½	¾	2	52	2½	¾	2	156		38
Moreland 20N—1919-20	3	¾	1¼	1¾	11	3	¼	4	11	3	¼	4	120		34
Moreland 20B-1½—1919-20	3	¾	1¼	1¾	12	3¾	¼	4	12	3¼	¼	4	132		34
Moreland 20C-2½—1919-20	3	¾	1½	1¾	13½	3½	¼	4	13½	3½	¼	4	156		34
Moreland 20G-4—1919-20	3	¼	1½	1¾	16	3¾	¼	4	16	3¾	¼	4	168		38
Moreland 20J-5—1919-20	3	¼	1½	1¾	18	4	¼	4	18	4	¼	4	168		38
Muskegon 20-2	3	¾	1¼	2	54	2½	¾	2	53	2¼	¾	2	119½		34
Mutual-2—1919-20	3	¼	1	1¼	51	2¼	¼	2	51	2¼	¼	2	128¾		34
Mutual 2A—1919-20	3	¼	1	.....	51	.....	.....	2	51	.....	.....	2	128¾		34
Napoleon 9-1—1919-20	3	¼	1	¾	44	2	¾	1	30	2½	¾	1	102		35
Napoleon 11-1½—1919-20	3	¼	1	¾	49	2	¾	1	30	2½	¾	1	102		35
Nash 2018-1—1919-20	4	¼	1¼	1¼	49½	2	¾	2	20	2½	¾	1	104½		30½
Nash 3018-2—1919-20	4	¼	1¼	1¼	50⅝	3	¾	2	20	2½	¾	1	118¼		31⅝
Nash 4017-2—1919-20	4	¼	1¼	1¼	49¼	2½	¼	2	25	2½	¼	1	117⅛		38⅛
Nelson & LeMoon F1	3	¾	1¼	¾	12	3¼	¼	2	12	3¼	¼	2	Opt		.....
Nelson & LeMoon F1½	3	¾	1¼	¾	12	3¼	¼	2	12	3¼	¼	2	Opt		.....
Nelson & LeMoon F2	3	¾	1¼	¾	12	3¼	¼	2	12	3¼	¼	2	Opt		.....
Nelson & LeMoon F3½	3	¼	1¼	¾	16½	3¾	¼	2	16½	3¾	¼	2	Opt		.....
Nelson & LeMoon F5	4	¼	1½	¾	18	4	¼	2	18	4	¼	2	Opt		.....
Netco D-2	3	¾	1¼	1	12	3½	¼	4	12	3½	¼	4	139½		34¼
Netco H-2½	3	¾	1½	1	13	3½	¼	4	13	3½	¼	4	144		34¾
Niles E-2	3	¾	1¼	1¼	12	3¼	¼	2	12	3¼	¼	2	114		.....
Noble A20-1—1919-20	4	¼	1	1	18	2	¼	4	18	2	¼	4	124		34
Noble B30-1½—1918-20	4	¼	1	1	43	2	¼	2	43	2	¼	2	136		34
Noble C40-2—1919-20	4	¼	1¼	1	43	2	¼	2	43	2	¼	2	148		34
Noble D50-2½—1919-20	4	¼	1¼	1	51	2¼	¼	2	51	2¼	¼	2	172		34
Noble E70-3½—1919-20	4	¼	1½	1	57	2½	¼	2	57	2½	¼	2	172		36

Northway B2-2	3	¾	1	1¼	1¼	60½	2¼	¼	2	50½	2¼	¼	2	133	33
Northway B-2	3	¾	1	1¼	1¼	50½	2½	¼	2	50½	2½	¼	2	118	33
Northway B-3	3	¾	1	1¼	1¼	54	2½	¼	2	54	2½	¼	2	173	34½
Northway-3½	3	¾	1	1¼	1¼	54	2½	¼	2	54	2½	¼	2	148	34½
O. K.-1½—1920	4	¼	1¼	1	1¼	53	2½	¾	2	38	2½	¾	2	117	34
O. K.-2½—1920	4	¼	1¼	1	1¼	62	2½	¾	2	48	2½	¾	2	125	35
O. K.-3½—1920	4	¼	1¼	1	1¼	62	2½	¾	...	48	2½	¾	2	133	34
Old Hickory W-1—1919	3	¾	1	⅜	1	24	2¼	¼	2	24	2¼	¼	2	120	36
Old Reliable A-1½—1918-20	3	¼	1	1¼	1¼	48	2½	¼	1	48	2½	¼	1	105	32
Old Reliable B-2½—1918-20	3	¼	1	1¼	1¼	54	2	¼	1	54	2	¼	1	144	32
Old Reliable C-3½—1918-20	3	¼	1	1¼	1¼	60	2½	¼	1	60	2½	¼	1	150	32
Old Reliable D-5—1918-20	3	¼	1	1½	1½	72	3	¼	1	72	3	¼	1	156	34
Old Reliable K, L, M-7—1918-20	3	¼	1	1½	1½	54	3½	¼	1	60	4	¼	1	158	36
Oldsmobile T-¾—1919-20	3	¾	1	⅛	1⅜	42¼	2	¾	1	41	⅛	2	1	92	¾ 34
Oneida A 9-1½	3	¾	1	.....	.....	48	2½	¾	2	34	2	¾	2	106	34
Oneida B 9-1¾	3	¾	1¼	.....	.....	48	2½	¾	2	34	2½	¾	2	114	34
Oneida C 9-2½	3	¾	1¼	.....	.....	58	2½	¾	2	43	2½	¾	2	138	34
Oneida D 9-3½	3	¼	1¼	.....	.....	16	4	¾	4	16	4	¾	4	157	36
Oneida E 9-5	3	¼	1¼	.....	.....	18	4	¾	4	18	4	¾	4	178	38
Oshkosh A-2	3	¾	1¼	2	.....	23⅝	3	¼	1	43	⅛	2½	2	108	¾ 34
Oshkosh AA-2	3	¾	1¼	2	.....	23⅝	3	¼	1	43	⅛	2½	2	143	¾ 34
Packard EC	3	¼	1⅝	1¾	.....	7	⅛	4¾	¼	2	14	2	2	132	31¾
Packard ED	3	¼	1⅝	1¾	.....	9	⅛	4¾	¼	2	17	3	2	144	39
Packard EF	3	¼	1⅝	1¾	.....	9	⅛	6½	¼	2	18¾	3½	2	144	39
Packard EY	3	¼	1⅝	1¾	.....	9	⅛	4¾	⅛	2	17	3	2	144	39
Packard EX	3	¼	1⅝	1¾	.....	9	⅛	6½	¼	2	18¾	3½	2	156	39
Paige 54-20-2½	3	¾	.....	1¼	.....	49⅝	2¼	¼	2	49⅝	2¼	¼	2	126	33
Paige 51-18-3½	3	¾	.....	1¼	.....	15⅝	3¾	¼	4	15⅝	3¾	¼	4	144	35
Paige 52-19-1½	3	¾	.....	1¼	.....	11½	3¼	¼	4	11½	3¼	¼	4	126	33
Parker F20-2—1920	3	¾	1¼	1½	1¼	10¾	5	¼	2	19	2½	¼	4	127	33
Parker J20-3½—1920	3	¼	1¼	1½	1½	10¾	5	¼	2	19	3½	¼	4	139½	33
Parker M20-5—1920	3	¼	1½	1¾	1¾	10¾	5	¼	2	24½	4	¼	4	145	37
Patriot Lincoln-2	3	¾	1	1	1	41	1¾	¼	2	41	1¾	¼	2	112	34
Patriot Revere-1	3	¾	1	1	1	41	1¾	¼	2	41	1¾	¼	2	92	½ 33¼
Patriot Washington-3	3	¾	1	1	1	55	2¼	¼	4	55	2¼	¼	4	150	34
Pierce Arrow-2-X-5	.....	.....	1	1	1⅛	22¼	2¼	¼	4	22¼	2¼	¼	4	126	34½
Pierce Arrow-3½-W-2	.....	.....	1	2	½	9	6	¼	2	18	4¾	½	4	134½	38½
Pierce Arrow-5-R-10	.....	.....	1	2	½	9	6	¼	2	20	4¾	½	4	140½	38½
Pittsburgher 2½—1919-20	3	¾	1	1¼	1¼	44	2¼	¼	2	44	2¼	¼	2	136	33
Pony ¼	3	¾	½	⅛	½	.....	.....	.....	.....	10	1½	⅛	2	40	24
Pony 2	3	¾	1	1¼	1½	.....	.....	.....	.....	.....	.....	.....	.....	132	33
Pony 3½	4	¼	1	1¼	1½	.....	.....	.....	.....	.....	.....	.....	.....	156	36
Rainier R-8-2	3	¾	1	¾		44½	2	¼	1	44½	2	¼	1	124	⅞ 34
Rainier R6-1½	3	¾	1	¾		19	2	¾	2	19	2	¾	2	97	¾ 34
Rainier R9-1	3	¾	1	¾		19	2	¾	2	19	2	¾	2	87	¾ 34
Rainier R11-¾	3	¾	1	¾		11¼	3	¾	2	11¼	3	¾	2	87	¾ 34
Reliance 10A-1½—1920	3	¾	1	¾		17	2	¾	4	17	2	¾	4	122	32
Reliance 20B-2½—1920	3	¾	1	¾		17	2	¾	4	17	2	¾	4	127	32
Reo F—1500-2500-lbs	3	¾	1	1		43	2¼	¾	1	31½	2	¾	2	82	30
Republic 10-1—1919-20	3	¾	1	.....		45	2½	¾	2	43	2¼	¾	2	98	34
Republic 11X-1½—1919-20	3	¾	1	.....		54¾	2½	¾	2	52½	2¼	¾	2	118	34
Republic 19-2½—1919-20	3	¾	1¼	.....		54¾	2½	¾	2	52⅛	2¼	¾	2	121	34
Republic 20-3½—1919-20	3	¾	1¼	.....		55¾	3½	¾	2	31	4½	¾	1	146	37
Reynolds 3A-1½	3	¾	1¼	.....		46	2	¾	2	46	2	¾	2	121	33
Reynolds 5A-2½	3	¾	1¼	.....		52½	2¼	¾	2	52½	2¼	¾	2	126	33
Reynolds 7A-3½	3	¾	1¼	.....		57	2½	¾	2	57	2½	¾	2	148	37
Reynolds 10A-5	3	¾	1¼	.....		70	3	¾	2	70	3	¾	2	148	37
Riker B3, BB-4	5	¼	.....	.....		.....	7¼	4½	2	20	4	¾	4	150	38
Rowe CW-1½—1918-19-20	3	¾	1	¾		19	2	¾	8	19	2	¾	4	121	½ 33
Rowe CDW2—1916-20	3	¾	1¼	¾		45	2	¾	4	45	2	¾	4	123	33
Rowe GSW3—1918-20	3	¾	1¼	¾		51½	2½	¾	4	51½	2½	¾	4	147	33
Rowe HW4—1918-20	3	¾	1¼	¾		56½	2½	¾	4	56½	2½	¾	4	150	36
Rowe FW5—1914-20	3	¾	1¼	¾		68	3	¾	4	68	3	¾	4	156	½ 38
Rowe GPW3—1916-17, 1919-20	3	¾	1¼	¾										144	33
Sandow G-1—1918-20	3	¾	1	¾		20	2	¾	2	20	2	¾	2	96	34
Sandow CG-1½—1918-20	3	¾	1	¾		20	2	¾	2	20	2	¾	2	120	34
Sandow I-2—1918-20	3	¾	1	¾		60	3	¾	1	60	3	¾	1	132	32
Sandow J-2½—1918-20	3	¾	1¼	¾		13½	3½	¼	2	16	3½	¼	2	144	32
Sandow L-5—1918-20	3	¾	1¼	¾		24	4½	¼	2	24	4½	¼	2	144	37
Sandow M-3½—1918-20	3	¾	1¼	¾		18½	4	¼	2	18½	4	¼	2	144	37
Sanford 25-2½—1917-20	3	¾	1¼	1¼		51½	2½	¼	2	51½	2½	¼	2	144	35
Sanford W35-3½—1917-20	3	¾	1¼	1¼		56	2½	¼	2	56	2½	¼	2	145	35
Sanford W50-5—1917-20	3	¾	1¼	1¼		69	3	¼	2	69	3	¼	2	145	35
Schacht 2	3	¼	1¼	.....		8½	3½	¼	4	13½	3	¼	4	140	35¼
Schacht 2½	3	¼	1¼	.....		8½	3½	¼	4	13½	3	¼	4	140	35¼
Schacht 3½	4	¼	1¼	.....		8½	3½	¼	4	13½	3	¼	4	152	35¼
Schacht 5	4	¼	1¼	.....		8½	3½	¼	4	15	4	⅛	4	152	35¼
Selden 1½A—1919-20	3	¾	1	1	¾	11	3¼	¼	2	11	3¼	¼	2	114	34
Selden 2½A—1919-20	3	¾	1	1	¾	13½	3½	¼	2	13½	3½	¼	2	134	34
Selden 3½A—1919-20	3	¾	1¼	1	¾	15¾	3¾	¼	2	15¾	3¾	¼	2	153	37½
Selden 5A—1920	3	¼	1½	1	¾	18	4	¼	2	18	4	¼	2	153	37½
Service 220-1—1919-20	3	¾	1	¾		12	3¼	¼	2	12	3¼	¼	2	109	½ 34
Service 31-1½—1919-20	4	¼	1	¾		12	3¼	¼	2	12	3¼	¼	2	121	⅛ 34
Service 36-1½—1919-20	4	¼	1	¾		12	3¼	¼	2	12	3¼	¼	2	121	⅛ 34
Service 51-2½—1919-20	4	¼	1	¾		13½	3½	¼	2	13½	3½	¼	2	131	½ 34
Service 71-3½—1919-20	4	¼	1	¾		16	3¾	¼	2	16	3¾	¼	2	150	¼ 38
Service 76-3½—1919-20	4	¼	1	¾		16	3¾	¼	2	16	3¾	¼	2	145	¾ 38
Service 101-5—1919-20	4	¼	1	¾		18½	4	¼	2	18½	4	¼	2	145	¾ 38

Replacement Table—Continued

Name, Model, Tonnage and Year	ENGINE				BRAKE LINING								FRAME	
	Piston Rings		Carburetor		Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Shaw M2—1918-20	...	....	1	⅞	49	2½	¼	2	45	2½	¼	2	60	43
Shaw M4—1918-20	...	....	1	⅞	11	3	¼	4	11	3	¼	4	92	32
Signal F-1	3	⅛	1 ⅛	1 ⅛	12	3¼	¼	2	12	3¼	¼	2	120	34
Signal H-1½	3	⅛	1 ⅛	1 ⅛	12	3¼	¼	2	12	3¼	¼	2	120	34
Signal J-2½	3	⅛	1 ⅛	1 ⅛	13½	3½	¼	2	13½	3½	¼	2	126	34
Signal M 3½	3	⅛	1 ⅛	1 ⅛	16	3¾	¼	2	16	3¾	¼	2	168	38
Signal R-5	3	¼	1½	1⅞	18	4	¼	2	18	4	¼	2	172	38
Standard I-K-1	3	⅛	1	1 ⅛	10⅞	3	¼	4	10⅞	3	¼	4	120	32
Standard 76-2½	3	⅛	1¼	1 ⅛	13 ⅛	3½	¼	4	13 ⅛	3½	¼	4	122	32
Standard 66-3½	3	⅛	1⅜	1 ⅛	15⅝	3¾	¼	4	15⅝	3¾	¼	4	144	38
Standard 86-5	3	⅛	1⅜	1 ⅛	17 ⅛	4	¼	4	17 ⅛	4	¼	4	144	38
Sterling 1½—1920	3	⅛	1⅜	⅛	11⅝	3¼	¼	4	11⅝	3¼	¼	4	120	33½
Sterling 2—1920	3	⅛	1¼	¼	13⅛	3½	¼	4	13⅛	3½	¼	4	120	33½
Sterling 2½—1920	3	⅛	1¼	¼	13⅛	3½	¼	4	13⅜	3½	¼	4	138	34
Sterling 3½—1920	3	⅛	1½	¼	15½	3¾	¼	4	15½	3¾	¼	4	144	38
Sterling 5-Worm—1920	3	⅛	1½	¼	18	4	¼	4	18	4	¼	4	158	38
Sterling 5-Chain—1920	3	⅛	1½	¼	56⅛	3½	¼	2	34 ⅛	4	¼	1	158	38
Sterling 7½—1920	3	⅛	1½	¼	56½	3½	¼	2	34 ⅛	4	¼	1	158	38
Stewart M7-2—1918-20	3	⅛	.....	1 ⅛	50⅝	2	⅛	2	8	5	⅛	2	132¾	32
Stewart M12-1—1920	3	⅛	.....	1	41⅜	2	⅛	2	22¾	2	⅛	1	99½	32
Stewart M9-1½—1918-20	3	⅛	.....	1	48½	2	⅛	2	8	5	⅛	2	119¼	32
Stewart M10-3½—1918-20	3	⅛	.....	1⅛	60	3	⅛	2	8	5	⅛	2	139¾	32
Stewart M11-¾—1919-20	3	⅛	.....	⅞	41 ⅜	2	⅛	2	22¾	2	⅛	1	77¼	32
Stewart M7X—1920	3	¼	.....	1 ⅛	50⅝	2	⅛	2	8	5	⅛	2	132¾	32
Stewart M10X—1920	3	¼	.....	1⅜	60	3	⅛	2	8	5	⅛	2	138	32
Stoughton B-1½	4	¼	1	1⅜	19	2	⅛	4	19	2	⅛	4	116	34
Stoughton D-2	4	⅛	1¼	1⅝	45	2	⅛	2	45	2	⅛	2	116	34
Stoughton E-2½	4	⅛	1¼	1⅝	52	2¼	⅛	2	52	2¼	⅛	2	127	36
Success B-2½	...	....	1⅜	¼	55	2¼	¼	1	55	2¼	¼	1	132	32¼
Sullivan E-2—1916-20	3	¼	1 ⅛	1 ⅛	13	3½	¼	8	13	3½	¼	8	144	34
Sullivan F-1½—1917-20	3	⅛	1 ⅛	1 ⅛	13	3½	¼	8	13	3½	¼	8	106	33½
Super Truck 50—1920	3	¼	1¼	.....	51½	2¼	¼	2	51½	2¼	¼	2	.....	.....
Super Truck 70—1920	3	¼	1¼	.....	55½	2½	¼	2	51½	2¼	¼	2	144	.....
Super Truck 100—1920	3	¼	1¼	.....	68	3	½	2	51½	2¼	¼	2	144	.....
Superior D-1—1919-20	3	⅛	1 ⅛	1 ⅛	45	2½	⅛	2	44	2¼	⅛	2	97¾	34
Superior E-2—1919-20	3	⅛	1 ⅛	1 ⅛	54	2½	⅛	2	53½	2½	⅛	2	114	34
Texan A 38-¾	3	⅛	1	1¼	17½	2¼	⅛	4	17½	1½	⅛	4	100	36
Tiffin GW-1½—1919-20	3	⅛	1¼	1¼	46	2	¼	1	46	2	¼	1	114	35
Tiffin MW-2½—1919-20	3	⅛	1¼	1¼	52	2¼	¼	1	52	2¼	¼	1	138½	32¾
Tiffin PW-3½—1919-20	3	⅛	1¼	1¼	58	2½	¼	1	58	2½	¼	1	151	35½
Tiffin TW-5—1919-20	3	⅛	1½	1½	68	3	¼	1	68	3	¼	1	156	38½
Tiffin UW-6—1919-20	3	⅛	1½	1½	68	3	¼	1	68	3	¼	1	156	38½
Titan 3½—1919	4	¼	1½	1 ¾	60	2¼	¼	2	14	4½	⅛	2	144	34
Titan 5-6—1918-20	4	¼	1½	1 ¾	90	2¼	¼	2	14	4½	⅛	2	144	34
Titan 2½—1920	4	¼	1¼	1¼	54	2¼	¼	2	26	4	⅛	1	144	32
Tower J-1½—1920	3	⅛	1⅜	1⅜	11¾	3¼	¼	4	11¾	3¼	¼	4	135¼	32½
Tower H-2½—1919-20	3	⅛	1⅜	1⅜	13 ⅛	3½	¼	4	13 ⅛	3½	¼	4	138¾	32½
Tower G-3½—1919-20	3	⅛	1½	1½	15⅝	3¾	¼	4	15⅝	3¾	¼	4	152 ⅛	37
Traffic C-4000—1919-20	3	⅛	1	⅞	43½	2½	⅛	2	38	1¾	⅛	2	120¾	42
Transport 20-1	3	⅛	.....	.....	48⅛	2	⅛	2	45⅞	1½	⅛	2	101	34
Transport 30-1½	3	⅛	.....	.....	48⅛	2½	⅛	2	45⅞	1½	⅛	2	117	34
Transport 50-2½	3	¼	.....	.....	50⅝	3	⅛	2	48½	2½	⅛	2	123	34
Transport 70-3½	4	¼	.....	.....	11½	4	⅛	2	58	2½	⅛	2	150	36½
Traylor B-1¼	...	....	1¼	1½	50	2	⅛	2	50	2	⅛	2	117	34
Traylor C-2	...	....	1¼	1½	50	2	⅛	2	50	2	⅛	2	120	34
Traylor D-3	...	....	1¼	1½	56½	2¼	⅛	2	56½	2¼	⅛	2	142	34
Triangle AA-¾—1920	3	....	1	1	22	2½	⅛	1	41	2	⅛	1	94	35
Triangle A-1½—1918-20	3	....	1	1	7	4	⅛	2	49	2	⅛	1	126	34
Triangle B-2½—1919-20	3	....	1¼	1¼	7	4	⅛	2	52	3	⅛	1	132	34
Triangle C-2—1920	3	....	1	1	7	4	⅛	2	52	3	⅛	1	129	34
Triumph 1½	...	....	.....	.....	.....	.....	.....	...	.....	.....	.....	...	120	.....
Twin City 2	3	¼	1¼	2	50	3	⅛	1	48	2½	⅛	1	132	33
Twin City 3½	4	¼	1¼	2	15	3¾	¼	2	15	3¾	¼	2	156	36
Ultimate A-2—1920	4	¼	1 ⅛	1⅝	45	2	¼	2	45	2	¼	2	132½	32¾
Ultimate AJ2—1920	4	¼	1 ⅛	1⅝	45	2	¼	2	45	2	¼	2	132½	32¾
Ultimate B-3—1920	4	¼	1 ⅛	1⅝	51	2¼	¼	2	51	2¼	¼	2	144	32¾
Ultimate BL3—1920	4	¼	1 ⅛	1⅝	51	2¼	¼	2	51	2¼	¼	2	192	32¾
Union F-2½	3	¼	1¼	1¼	65½	3	⅛	1	49½	2	⅛	1	133½	32
Union H-4	3	¼	1¼	1	57½	3½	⅛	1	33	4	⅛	1	157½	34

Name, Model, Tonnage and Year	ENGINE				BRAKE LINING								FRAME	
	Piston Rings		Carburetor		Service				Emergency				Length	Width
	No. per cyl.	Width	Outlet Diameter	Inlet Diameter	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
United-1½	...	....	1	1 ⅛	48	2	⅛	1	48	1½	⅛	1	120	33
United-2½	...	....	1¼	1 ⅛	49	3	⅛	1	49	2½	⅛	1	Opt	33
United-3½	...	....	1¼	1 ⅛	62	3	⅛	1	58	2½	⅛	1	Opt	34
United-5	...	....	1½	1 ⅛	88½	2¼	⅛	1	88½	2¼	⅛	1	Opt	38
U.S.N.-1½	3	⅛	1	⅞	46½	2	⅛	2	50½	1½	⅛	2	120	34
U.S.R.-2½-3	3	⅛	1¼	⅞	46	2¼	¼	2	46	2¼	¼	2	144	34
U.S.S.-3½-4	3	⅛	1¼	¼	50	2½	¼	2	50	2½	¼	2	156	36
U.S.T.-5-6	3	¼	1½	¼	62	3	¼	4	33	4	¼	2	168	36
Velie 46-1½—1919-20	3	⅛	1	⅛	54 ⅛	2½	¼	2	52 ⅛	2¼	¼	2	120	31
Vim 29-½	3	⅛	.....	⅞	14½	1½	¼	4	14½	1½	¼	4	64	30
Vim 30-½	3	⅛	.....	⅞	14½	1½	¼	4	14½	1½	¼	4	83½	30
Vim 31-1	4	⅛	1	.....	19	2	¼	4	19	2	¼	4	92	32
Vim 22-2	4	⅛	.....	.....	44½	2	¼	2	44½	2	¼	2	121¼	34
Vim 23-3	5	⅛	1¼	.....	51½	2¼	¼	2	51½	2¼	¼	2	159½	34
Walker M½	...	....	.....	.....	43	2¼	⅛	2	14	1¾	⅛	4	87	32
Walker K1	...	....	.....	.....	45½	2½	⅛	2	16	2	⅛	4	96	32
Walker L2	...	....	.....	.....	53¼	2½	⅛	2	19	2	⅛	4	120	32
Walker P3½	...	....	.....	.....	53¼	3	⅛	2	19 ⅛	2½	⅛	4	140	35
Walker N5	...	....	.....	.....	53¼	3	⅛	2	19 ⅛	2½	⅛	4	162	35
W. J.-B2½	4	¼	1¼	1¼	13	3½	¼	4	13	3½	¼	4	136½	32 ⅛
Walter S-5	3	⅛	1¾	.....	15	5	¼	4	57	2½	¼	2	150	36
Ward LaFrance 2B-2½—1920	3	¼	.....	1¼	13 ⅛	3½	¼	4	13 ⅛	3½	¼	4	124	33
Ward LaFrance 4A-3½—1920	3	¼	.....	1½	15⅝	3¾	¼	4	15⅝	3¾	¼	4	169½	37
Ward LaFrance 5A-5—1920	3	¼	.....	1½	17 ⅛	4	¼	4	17 ⅛	4	¼	4	217½	37
Ward WS2	...	....	.....	.....	29	1½	¼	4	29	1½	¼	4	72	32 ⅛
Ward WA	...	....	.....	.....	16	1¾	¼	4	16	1¾	¼	4	95	33 ⅛
Ward WB	...	....	.....	.....	20	2	¼	4	20	2	¼	4	120	33¾
Ward WD	...	....	.....	.....	48⅞	2¼	¼	4	48⅞	2¼	¼	4	144	33⅛
Ward WF	...	....	.....	.....	56⅞	2½	¼	4	56⅞	2½	¼	4	168	34⅛
Ward WH	...	....	.....	.....	68¾	3	¼	4	68¾	3	¼	4	192	37
Watson B¾	...	....	1	.....	41	1¾	⅛	2	41	1¾	⅛	2	96	30
Watson N-3½	...	....	1¼	.....	62	2½	¼	2	47	2½	¼	2	147	37
Watson U-5	...	....	1¼	.....	15½	3¾	¼	4	15½	3¾	¼	4	.....	36
Wells 2	3	⅛	.....	¼	54	2½	⅛	2	51	2½	⅛	2	120¾	34
White 15-¾	3	....	.....	.....	.....	.....	.....	...	.....	.....	.....	...	76½	34
White 20-2	3	....	.....	.....	.....	.....	.....	...	.....	.....	.....	...	107½	34
White 40-3	....	....	1	.....	.....	.....	.....	...	.....	.....	.....	...	157	42
White 45-5	....	....	1	.....	.....	.....	.....	...	.....	.....	.....	...	157	42
White Hickory H-1½—1919	3	⅛	1¼	1	13½	3½	¼	4	13½	3½	¼	4	116¼	32
White Hickory H1½—1920	3	⅛	1¼	1	11¾	3¼	¼	4	11¾	3½	¼	4	116¼	32
White Hickory E-1—1920	3	⅛	1¼	1	11	3	¼	4	11	3	¼	4	92¼	32½
White Hickory K-2½—1920	3	⅛	1½	1¼	13½	3½	¼	4	13½	3½	¼	4	150	32
Wichita K-1—1915-20	3	⅛	1	1⅜	19½	2	¼	4	19½	2	¼	4	127½	30
Wichita L-1½—1916-20	3	¼	1	1⅜	49	2	⅛	2	49	2	⅛	2	127½	30
Wichita M-2—1915-20	3	¼	1	1⅜	49	2	⅛	2	49	2	⅛	2	126½	30
Wichita R-2½—1917-20	3	¼	1	1⅜	54	2¼	⅛	2	54	2¼	⅛	2	126½	30
Wichita RX-2½—1919-20	4	¼	1¼	1¼	54	2¼	⅛	2	54	2¼	⅛	2	130	30
Wichita O-3½—1915-20	4	¼	1¼	1¼	56½	2½	¼	2	56½	2½	¼	2	152½	36
Wichita S-5—1919-20	4	¼	1¼	1¼	66	3	¼	2	66	3	¼	2	163½	36
Wilcox AA-1—1920	3	⅛	1	.....	47 ⅛	2½	⅛	2	33¼	2½	⅛	2	96	34
Wilcox B-1½—1919	3	⅛	1¼	.....	47 ⅛	2½	⅛	2	33¼	2½	⅛	2	132	33
Wilcox C-2½—1919	3	⅛	1¼	.....	57½	2½	⅛	2	42½	2½	⅛	2	141	33
Wilcox E-3½—1920	3	⅛	1¼	.....	57½	2½	¼	2	42½	2½	¼	2	156	33
Wilcox F-5—1920	3	¼	1½	.....	69½	3½	¼	2	52	3½	¼	2	148½	36
Wilson 1½—1919-20	4	⅛	.....	1	39½	1¾	¼	2	39½	1¾	¼	2	120	33
Wilson 2½—1919-20	4	⅛	.....	1¼	13¾	3½	¼	4	13¾	3½	¼	4	126	38
Wilson 3½—1919-20	4	⅛	.....	1½	16	3¾	¼	4	16	3¾	¼	4	147	38
Wilson 5—1919-20	4	⅛	.....	1½	18	4	¼	4	18	4	¼	4	147	38¼
Winther 39-1½	3	¼	1¼	.....	50	2¼	¼	2	22½	2¼	¼	1	120	30
Winther 430-1½	3	¼	1¼	.....	50	2¼	¼	2	22½	2¼	¼	1	120	30
Winther 49-2	3	¼	1¼	.....	52	3	¼	2	50	2¼	¼	2	144	33
Winther 70-3½	3	¼	1¼	.....	62	3	¼	2	60	2½	¼	2	156	33
Winther 109-5	3	¼	1½	.....	93	2¼	¼	2	93	2¼	¼	2	156	33
Winther 140-7	3	¼	1½	.....	93	2¼	¼	2	93	2¼	¼	2	156	33
Winther 751-¾-1	3	⅛	1	.....	42	2	⅛	2	24	2	⅛	1	102	30
Witt Will N-1½—1919-20	3	⅛	1¼	1¼	46	3¼	¼	4	46	3¼	¼	4	Opt	32
Witt Will P-2—1919-20	3	⅛	1¼	1¼	48	3½	¼	4	48	3½	¼	4	Opt	32
Wolverine C-1½—1918-20	3	⅛	1	1	41½	2½	¼	2	41½	1¾	¼	2	120	34½
Wolverine D-2—1920	3	⅛	1	1	51	3	¼	2	46	2	¼	2	132	34½

KEY OF ABBREVIATIONS

Note: Numerals on This Page Correspond With Numerals at Head of Specification Columns on Pages Following

In All Specifications { O—Own / Op or Opt—Optional

Engine:
Beav—Beaver
Cont—Continental
GBS—Golden, Belknap & Swartz
Her—Hercules
Hin—Hinkley
HSp—Herschell-Spillman
1 LeR—Le Roi
Lib—Liberty
LMF—Light Mfg. & Fdy.
Lyco—Lycoming
Rut—Rutenber
Ster—Sterling
TC—Twin City
Vict—Victory
Wau—Waukesha
Wei.—Weidely
Wis—Wisconsin

Valve Arrangement:
H—Overhead
2 L—ELL-Head
T—TEE-Head
S—Sleeve

How Cooled:
A—Air
3 C—Centrifugal
G—Gear Pump
T—Thermo-Syphon

Radiator (Make):
BW—B & W
Brm—Brenem
Bus—Bush
Can—Candler
Chic—Chicago
EM—English-Mersick
Eur—Eureka
Fed—Fedders
Flex—Flexo
GO—G. & O.
Har—Harrison
Hoo—Hooven
4 Idl—Ideal
Jam—Jamestown
Kue—Kuenz
Liv—Livingston
Lng—Long
McC—McCord
May—Mayo
Mod—Modine
Per—Perfex
R-T—Rome-Turney
Spar—Spartan
Spec—Special
Spli—Splitex
Stan—Standard

Radiator (Type):
5 C—Cellular
H—Honeycomb
PT—Plain Tube
FIN—Fin Tube
ZZT—Zig Zag Tube

Lubrication:
FS—Force and Splash
6 F—Force Feed
S—Splash

Carburetor:
B&B—Ball & Ball
Bent—Bennett
Cart—Carter
Eag—Eagle
Ens—Ensign
Flch—Fletcher
Holl—Holley
John—Johnson
7 King—Kingston
Mar—Marvel
Mas—Master
Mill—Miller
Rayf—Rayfield
Strm—Stromberg
Shk—Shakespeare
Sheb—Schebler
Stew—Stewart
Till—Tillotson
Zen—Zenith

Fuel Feed:
8 G—Gravity
P—Pressure
V—Vacuum

Governor:
Con—Continental
Del—Delaney
Dup—Duplex
Hin—Hinkley
Mer—Merrill
9 McC—McCanna
Mon—Monarch
Phar—Pharo
Pier—Pierce
Rug—Ruggles
Sim—Simplex
Wau—Waukesha

Clutch (Make):
B. B.—Borg & Beck
B-Li.—Brown-Lipe
Covt.—Covert
Det.—Detlaff
10 Full.—Fuller
D. G.—Detroit Gear & Mach.
Hart—Hartford
M-E—Merchant & Evans
Munc.—Muncie
War.—Warner

Clutch (Type):
D—Disc
11 C—Cone
DP—Dry Plate
WP—Wet Plate
WD—Wet Disc
DD—Dry Disc
Fr—Friction

Ignition System:
Aer—Aero
Amr—American Swiss
AtK—Atwater-Kent
AuL—Auto-Lite
Bos—Bosch
Ber—Berling
Con—Connecticut
Del—Delco
Dix—Dixie
Eis—Eisemann
Exi—Exide
Kin—Kingston
12 KW—K. W. Ignition Co.
Lor—Louraine
NE—North East
POL—Prest-O-Lite
Rm—Remy
Sim—Simms
Spl—Splitdorf
Wag—Wagner
Wes—Westinghouse

Engine Starter:
AC—Allis-Chalmers
AL—Auto-Lite
Bj—Bijur
DL—Delco
Dy—Dyneto
GD—Gray & Davis
LN—Leece-Neville
13 NE—North East
RE—Remy
Wg—Wagner
USL—U. S. L.
W—Westinghouse

Gearset:
B-Li—Brown-Lipe
Cott—Cotta
Covt—Covert
D-Sea—Driggs-Seabury
Det—Detroit
Dun—Dundore
Durst—Durston
14 Full—Fuller
G-Le—Grant Lees
MM—Mechanics Mach. Co
Munc—Muncie
Rock—Rockford
Warn—Warner

Location of Gearset:
15 A—Amidships
R—Rear
U—Unit with engine
J—Unit with jackshaft

Universal:
16 A-B—Easton Mch. Co.
Acm—Acme
Arv—Arvac
Bear—Bearings Co.
Bld—Blood Brothers
Dit—Ditwiler
Flex—Flexite
Hart—Hartford
KB—Kinsler-Bennett
Mech—Mechanics
M-E—Merchant & Evans
Pet—Peters
Sned—Snead
Spic—Spicer
Ster—Sterling
Ther—Thermoid
UM—Universal Machine
UP—Universal Products

Springs:
Bea—Beans
Cham—Champion
Coop—Cooper
Del—Delany
Det—Detroit
GC—Garden City
Hig—Higgins
IC—Iron City
Kal—Kalamazoo
Lah—Laher
Mar—Maremont
Math—Mather
17 Mer—Merrill
Nat—National
Per—Perfection
Row—Rowland
Shel—Sheldon
SP—Spring Perch
Stan—Stan-Par
Ster—Sterling
Tem—Temme
Tut—Tuthill
US—United States
Wis—Wisconsin

Final Drive:
B—Bevel Gear
C—Chain
I—Internal Gear
18 N—Concentric Spur
P—Spur
R—Double Reduction
S—Spiral Bevel
W—Worm

Rear Axle (Make):
Badg—Badger
Col—Columbia
Stan—Chicago
Cl—Clark
Emp—Empire
19 Hind—Hindley
Ir.M—Iron Mt.
Keno—Kenosha
Ken—Kennedy
Rock—Rockford
Russ—Russel
Sals—Salisbury
Sav—Savage
Shel—Sheldon
S-Par—Stan-Par
Thom—Thomson
Tim—Timken
Torb—Torbensen
W-M—Weston-Mott
US—United States
Walk—Walker
Wis—Wsconsin

Rear Axle (Type):
Flot—Floating
20 ½-Fl—Semi-Floating
¾-Fl—¾-Floating
D—Dead

Steering Gear:
CAS—C. A. S. Products Co.
Dit—Ditwiler
Gem—Gemmer
21 Jac—Jacox
Lav—Lavine
Ros—Ross
War—Warner
Woh—Wohlrab

Wheels:
Arc—Archibald
AuW—Auto Wheel
Bim—Bimel
Cla—Clark
Day—Dayton
Det—Detroit
E&O—Eberly & Oris
Hay—Haynes
Hoo—Hoopes Brothers
Jon—Jones
Kel—Kelsey
22 Mot—Motor Wheel
Mut—Mutual
Pru—Prudden
Roy—Royer
Rus—Russell
Sal—Salisbury
Sch—Schwartz
Smi—Smith
Sta—Stanwell
StM—St. Mary
Stn—Standard
Wal—Walker
Wan—Wayne
W-L—Waterhouse & Lester
Wes—Western Wheel Co

Rim Equipment:
Bak—Baker
Det—Detroit
23 Fir—Firestone
Gdy—Goodyear
Jax—Jaxon
Kel—Kelsey
Stn—Stanweld

Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. GasolineTractor-Trucks and Electric Commercial Cars Will be Found at the End of Gasoline Commercial Cars

See Also Replacement Table in "Service and Repair Departments." Truck Frame Dimensions Are Included in Replacement Table

(Where prices are not given it is because we have been unable to get them from authoritative sources)

*** An asterisk in front of the model name indicates that corrections have been made somewhere in the specifications since the previous month**

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels
		1		2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23			
1000 Pounds																																		
Dodge	1085	Own	3 7/16x4 1/2	24	L	C	MeC	PT	FS	Stew	V	.....	Own	DD	Own	NE	Own	U	3	Own	.....	S	Own	Flot	4.1	19.4	Own	33x4	33x4	Kel	Kel	1990	114	41
Ellsworth 25A	.....	LeR 2C	3 1/2x5	16.9	L	T	.....	PT	S	Cart	G	.....	B.B.	.....	Con	AL	G-Le	U	3	.....	Shel	B	.....	.....	4.7	16.	.....	30x3 1/2*	30x3 1/2*	Sal	Det	2100	108	70
Elmira	.....	LeR	3 1/2x4 1/2	15.6	L	T	.....	H	FS	Holl	.....	.....	.....	DD	Opt	.....	Own	...	3	Ther	Own	B	.....	½Fl	3.6	.....	Own	28x3 1/2*	28x3 1/2*	.....	.....	.....	104	65
*Seneca	.....	LeR	3 1/2x4 1/2	15.6	L	T	Kue	C	S	Sheb	V	.....	B.B.	D	Con	AC	Warn	U	3	UM	Math	S	Peru	Flot	4.75	14.45	Dit	30x3 1/2*	30x3 1/2*	Day	Jax	1700	108	80
Vim 29	1355	Own	3 1/2x4 1/2	15.6	L	T	MeC	PT	FS	Zen	G	.....	B.B.	DD	Wes	W	.....	U	3	Spic	Shel	W	Shel	.....	5.5	.....	CAS	31x4*	31x4*	Hoo	Fir	2175	108	....
Vim 30	1550	Own	3 1/2x4 1/2	15.6	L	T	MeC	PT	FS	Zen	G	.....	.....	DD	Wes	W	.....	U	3	Spic	Shel	W	Shel	.....	5.5	.....	CAS	32x4 1/2*	32x4 1/2*	Hoo	Fir	2290	127	....
1500 Pounds																																		
*G. M. C. 16	.....	Cont N-	3 3/4x5	22.5	L	C	MeC	.....	S	Mar	G	Mon	Own	DP	Eis	.....	Own	U	3	Um	Opt	B	Own	¾Fl	6.	21.9	Jac	35x5*	35x5*	.....	Bak	2940	132	67
H. R. L.-L	2400	H-Sp 7000	3 1/2x5	19.6	L	C	Fed	Fin	F	Zen	G	.....	Own	DP	Bos	GD	Covt	U	3	Spic	Shel	W	Wis	½Fl	6.2	22.	Ross	34x4 1/2*	35x5*	Sch	.....	3300	134	....
International H	1850	Own-H	3 1/2x5 3/4	19.6	L	C	Own	Fin	FS	Holl	G	Own	Own	DP	Bos	Own	Own	A	3	Own	.....	I	Own	D	7.	25.	Own	36x3 1/2	36x3 1/2	Own	.....	2800	115	50
Kearns ¾	1550	L. M. F.-H	3 1/4x4 1/2	16.9	...	T	Own	H	FS	Zen	...	Mon	B.B.	DD	Ber	Dy	G-Le	U	3	M-E	.....	I	Torb	D	.....	.....	Lav	32x4 1/2*	32x4 1/2*	.....	.....	2000	118	70
Marshall	.....	Lyco	3 1/4x5	16.9	...	T	.....	C	...	.....	...	.....	Hart	.....	.....	.....	.....	U	3	.....	.....	...	.....	Flot	.....	.....	.....	30x3 1/2	30x3 1/2	.....	Fir	.....	112	....
*Oldsmobile	1500	Own-FB	3 7/16x5 1/4	21.7	H	T	Own	C	FS	Zen	V	.....	Own	C	Rm	AL	.....	U	3	Spic	.....	I	Torb	D	6.5	22.8	Jac	35x5	35x5	AuW	Jax	2580	128	73
Rainier R11	2150	Cont-N	3 1/2x5	19.6	L	T	Har	H	..	Zen	V	Mon	B-Li	DD	Sim	.....	B-Li	...	3	Hart	Per	W	Tim	.....	7.2	23.9	Lav	35x5*	35x5*	Sch	Fir	2350	125	80
Shaw M-2	1975	Cont N-¾	3 3/4x5	22.5	L	T	.....	PT	FS	Zen	G	.....	B.B.	DP	Eis	Dy	B-Li	U	3	Spic	Math	B	Tim	.....	4.9	16.31	Gem	32x4*	32x4*	Stn	Fir	2400	116	65
*Stewart 11	1295	LeR-2C	3 1/2x4 1/2	15.6	...	T	Bus	PT	FS	Zen	G	.....	B.B.	DD	Con	Bj	G-Le	U	3	UP	Mar	B	Peru	Flot	4.2	12.6	CAS	33x4	33x4	Stn	Fir	2500	112	60
Texan	1495	Lyco-K	3 1/2x5	19.6	L	T	Har	C	FS	Cart	V	.....	B.B.	DD	Con	D	B-Li	U	3	UP	Det	I	Cl	D	6.6	19 8	CAS	32x4	32x4	Wan	Fir	2190	110	66.7
Triangle AA	1600	H-Sp	3 1/4x5	16.9	L	T	Per	ZZT	FS	Strm	G	.....	Full	DD	NE	NE	Full	U	3	UP	Det	I	Cl	.....	6.1	18.1	Gem	35x5*	35x5*	Hay	Fir	2600	115	60
Watson B	.....	Wau BUX	3 3/4x5 1/4	22.5	L	P	GO	C	S	John	G	Wau	B-Li	D	Con	D	B-Li	U	3	M-E	Shel	W	Emp	½Fl	6.2	20.7	Lav	34x4 1/2*	34x4 1/2	.....	.....	2900	128	....
White 15	2400	Own	3 3/4x5 1/2	22.5	L	C	.....	C	FS	Own	G	.....	Own	D	.....	.....	.....	A	4	Own	.....	B	Own	½Fl	.....	.....	Own	34x4 1/2*	34x4 1/2*	.....	Fir	2960	133	....
1 Ton																																		
Acason R	.....	Wau B.U.X.	3 3/4x5 1/4	22.5	L	P	Can	C	S	Sheb	V	Wau	Full	.....	Eis	.....	Full	U	3	Bld	Det	W	Tim	.....	8.2	33.1	Ros	36x3 1/2†	36x5	Bim	Opt	3650	142	....
Acme B	2175	Cont N	3 3/4x5	22.5	L	T	GO	C	FS	Rayf	V	Dup	B.B.	DP	Eis	GD	Cott	U	3	Bld	Det	W	Tim	½Fl	7.2	28.8	Ros	34x3 1/2	34x5	Bim	.....	3750	130	50
All American 1	1795	H-Sp 7000	3 1/2x5	19.6	L	T	Stan	T	FS	Strm	G	Pier	B.B.	DP	Sim	Dy	Cott	...	3	Hart	Det	I	Torb	D	8.1	18.1	Lav	33x4*	32x4	Stn	Gdy	2600	130	75
Apex C	1745	Buda R.U	3 3/4x5 1/2	22.5	L	T	GO	.....	F	Strm	V	.....	Full	.....	AuL	Op	Full	U	3	UP	Det	I	Torb	D	6.5	19.5	Lav	33x4*	32x3 1/2	.....	Fir	2870	130	70
Armleder 20	.....	Buda CTU	3 3/4x5 1/2	22.5	L	T	Lng	Fin	F	Zen	V	.....	Full	DD	Bos	W	Full	U	3	Spic	Math	W	Timk	Flot	7.25	29	Ros	34x3 1/2	34x5	StM	.....	3950	148	80
*Atlas 21	1655	Lyco	3 1/2x5	19.6	L	T	Own	H	S	Strm	...	.....	B.B.	DD	AtK	Wg	Own	...	3	Ster	Row	W	Own	.....	.....	.....	CAS	32x4 1/2*	32x4 1/2*	.....	.....	2650	130	70
Avery	.....	Own 6	3 x4	21.6	L	T	.....	C	S	Strm	V	Own	Own	DP	KW	W	Own	...	3	Own	Math	I	.....	D	.....	.....	Ros	34x5	34x5	Own	.....	.....	129	....
Beck Hawkeye A	1950	H-Sp N-¾	3 3/4x5	22.5	L	T	Har	C	S	Strm	G	Pier	Full	DD	Bos	.....	Full	...	3	Bld	Hig	I	Cl	D	6.1	20.51	Lav	35x5*	35x5*	Hay	Fir	2800	124	75
Belmont	.....	GBS-SMG	3 3/4x4 1/4	22.5	L	T	GO	.....	S	Zen	G	.....	B.B.	.....	Con	Dy	.....	U	3	Ster	.....	B	.....	¾Fl	5.2	15.75	Lav	31x4*	31x4*	E-O	Stn	2000	113	60
Bessemer	.....	Cont N	3 1/2x5	19.6	L	T	.....	C	FS	Strm	G	.....	Full	DD	Bos	.....	Full	U	3	Arv	Per	I	Torb	D	7.1	20.25	Ros	34x3 1/2	34x4	Sch	Fir	2910	124	57
*Bethehem K	1695	Own K	3 1/2x5	19.6	L	T	Liv	C	F	Zen	G	.....	B.B.	DP	Bos	GD	Det	U	3	Spic	Math	I	Col	¾Fl	6.8	18.75	Ros	34x4 1/2*	35x5*	Wan	.....	2715	125	....
Birch 1	1595	Vict	3 1/2x5	19.6	I	T	Chic	PT	FS	Strm	G	.....	Full	DD	Con	....	Full	U	3	UM	.....	I	Cl	D	.....	.....	Lav	32x3 1/2	32x4	.....	.....	3200	132	....
*Chevrolet T	1325	Own	3 7/16x5 1/4	21.7	H	C	Har	....	FS	Zen	..	Mon	....	C	Rm	AL	Warn	...	3	Arv	.....	W	.....	½Fl	.....	.....	War	33x4*	35x5*	.....	Jax	2840	125	....
*Clydesdale 32 C	2375	Own CU2	3 3/4x5 1/8	22.5	L	G	Own	PT	F	Strm	V	Own	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Per	W	S-Par	½Fl	7.25	24.1	Ros	34x3 1/2	34x5	.....	.....	3240	149	72
Collier 18	.....	Cont N	3 1/2x5	19.6	T	P	Lng	PT	S	Zen	V	Mon	Full	DP	Eis	.....	Full	U	3	.....	Math	W	Timk	.....	7.75	31	Ros	34x4	34x5	Bim	Fir	.....	140	70
*Columbia F	1850	Cont N	3 3/4x5	22.5	L	T	Lng	Fin	FS	Shk	G	Pier	B.B.	DD	Dix	.....	Covt	U	3	Spic	Per	I	Russ	D	7.5	21.1	Own	34x3 1/2	34x5	StM	Fir	3000	125	40
Commerce E	1990	Cont N	3 3/4x5	22.5	L	T	Lng	Fin	S	Zen	V	.....	D.G.	C	Eis	.....	Det	U	3	Spic	Det	I	Torb	.....	7.1	22.9	Jac	35x5	35x5	Bim	Fir	2900	126	80
Conestoga 20	.....	Cont N	3 1/2x5	19.6	L	T	EM	ZZT	S	Strm	G	.....	Full	DD	Sim	.....	Full	U	3	Ster	Shel	W	Wis	.....	7.7	23.1	Ros	34x3 1/2	34x5	E-O	Stn	3300	128	90
Corbitt E	2400	Cont N-¾	3 3/4x5	22.5	L	T	McC	Fin	FS	Strm	V	Sim	Full	DD	Eis	.....	Full	U	3	Hart	Shel	W	Shel	½Fl	6.5	19.5	Ros	34x3 1/2	34x4	Bim	Fir	3890	130	75
*Day Elder A	2100	Cont N-¾	3 3/4x5	22.5	L	T	Bus	Fin	FS	Zen	G	.....	Covt	D	Eis	.....	Covt	U	3	Hart	IC	W	Shel	½Fl	7.8	28.55	Gem	34x3 1/2	34x4	Jon	Fir	3250	128	70
*Denby 12	2400	Cont N-¾	3 3/4x5	22.5	L	T	Lng	PT	FS	Strm	G	Mon	Full	DD	Eis	.....	Full	U	3	UP	Det	I	Russ	D	8.2	26.4	Ros	35x5*	36x6*	Hay	.....	3220	124	73
Diehl A	1750	Cont N	3 1/2x5	19.6	...	T	.....	H	FS	Zen	V	.....	B.B.	.....	Sim	.....	Durs	...	3	KB	Mar	I	Torb	D	5.3	.....	Jac	34x4 1/2*	35x5*	Sch	Fir	2400	115	90
Famous B-10	1995	Cont N	3 1/2x5	19.6	L	T	Chic	PT	S	Strm	V	Mon	Full	DD	Eis	.....	Full	U	3	Bear	Det	I	Cl	D	7.1	21.1	Ros	36x3 1/2	36x4	Bim	Fir	3000	120	75
*Federal SD	2500	Cont J-4	3 3/4x5	22.5	L	T	Own	....	F	Zen	V	Phar	B.B.	DD	Eis	.....	Own	A	3	Pet	Math	W	Timk	....	6.25	20.6	Gem	35x5*	36x6*	Det	Det	3600	132	65
*Ford T	545	Own	3 3/4x4	22.5	L	C	Own	PT	S	Holl	G	.....	Own	DP	Own	.....	Own	U	2	Own	Own	W	Own	½Fl	7.25	19.9	Own	30x3 1/2*	32x4 1/2	.....	.....	1500	124	50
Forschler A	2100	Cont N	3 1/2x5	19.6	L	C	EM	....	FS	Zen	..	Dup	Full	....	Bos	Op	Full	...	3	Hart	Own	W	Shel	.....	.....	.....	Ros	36x3	36x4	.....	.....	3450	120	....
Fulton A	1775	H-Sp-7000	3 1/2x5	19.6	...	T	Liv	H	FS	Cart	G	.....	B.B.	DP	Ber	W	Durs	U	3	Spic	Row	B	Col	.....	6.8	.....	Lav	35x5	.....	Hoo	Fir	2800	130	65
Giant 15	2425	Cont N	3 3/4x5	22.5	L	T	Idl	....	FS	Sheb	G	.....	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Math	W	Shel	.....	7.8	24.97	Jac	34x3 1/2	34x5	Wan	.....	2950	138	94
*G. M. C. 16	.....	Cont N	3 3/4x5	22.5	L	T	MeC	PT	S	Mar	G	Mon	Own	DP	Eis	.....	Own	U	3	UM	.....	B	Own	¾Fl	6.	21.9	.....	35x5*	35x5*	.....	Bak	2940	132	67
Hahn J-4	.....	Cont J4-	3 3/4x5	22.5	L	T	Own	PT	F	Strm	G	.....	.....	DD	Eis	.....	B-Li	...	3	Spic	.....	W	Shel	.....	1	.....	.....	36x3 1/2	36x5	.....	Bak	3200	.....	.....
Higrade A18	2100	Cont N	3 1/2x5	19.6	L	T	Per	PT	FS	Zen	V	Dup	Full	DD	Sim	AL	Full	U	3	Bld	Per	W	Shel	.....	.7	22.75	Lav	35x5	35x5	Det	Fir	2700	115	66
Hoover 15B	.....	Cont N	3 1/2x5	19.6	L	G	Can	....	F	Sheb	V	.....	Full	.....	Dix	.....	Full	U	3	Acm	Shel	W	Shel	.....	6.2	18.6	Lav	32x4	33x4 1/2	E-O	Fir	2425	120	....
Independent F (Ohio)	.....	Cont N	3 3/4x5	22.5	L	C	Lng	PT	F	Sheb	G	Pier	Full	DP	Eis	.....	Full	U	3	Ster	Math	W	Wis	.....	8.2	33.1	Ros	36x3 1/2	36x5	.....	.....	3400	851	85
International F	2050	Own F	3 1/2x5 1/4	19.6	L	C	Own	Fin	FS	Holl	G	Own	Own	DP	Bos	Own	Own	A	3	Own	.....	I	Own	D	8.	26.5	Own	36x3 1/2	36x4	Own	.....	3000	128	50
Kleiber AA	2600	Cont C-4	4 1/16x5 1/4	27.2	L	T	Per	C	...	Strm	G	Pier	.....	DD	Bos	.....	B-Li	U	3	Spic	.....	W	Timk	¾Fl	7.75	31.	Ros	34x3 1/2	34x5	W-L	.....	4200	130	75
Lone Star 9	.....	Vict	3 1/2x5	19.6	I	T	Chic	PT	S	Strm	V	.....	Full	.....	Con	.....	Full	A	3	Ther	.....	I	Keno	D	...	.....	Lav	34x4 1/2*	34x4	.....	.....	3200	134	.....

Menominee HT	2080	Wis CAU	3¾x5	22.5	L	C	.....	Fin	FS	Strm	G	Mon	Det	DP	Eis	.....	Cott	U	3	Spic	Tut	W	Wis	.....	7.75	28.52	Ros	34x3½	36x5	Stn	Fir	.....	130	80
Moreland 20-N	2850	Cont J4	3¾x5	22.5	L	C	Own	C	FS	Mas	G	.....	Own	DD	Dix	.....	Own	A	4	Ther	US	W	Timk	.....	.....	.....	Ros	35x5	36x6	.....	.....	3700	132	....
Napoleon 9	1535	Vict	3½x5	19.6	H	T	Own	PT	F	Sheb	G	.....	Full	DD	Con	AL	Full	U	3	Bld	Math	I	Torb	D	6.1	18.1	Lav	35x5*	35x5*	.....	Fir	3200	133	65
Nash 2018	1895	Own-4	3¾x5¼	22.5	L	C	.....	PT	F	Strm	G	Sim	B.B.	DD	Eis	AL	.....	U	3	Own	.....	I	CL.	D	6.8	21.85	Lav	34x3	34x4	AuW	.....	3400	130	67.5
Nelson & LeMoon F1	.....	Cont C-4	4⅛x5¼	27.2	L	C	Chic	Fin	S	Strm	G	Pier	B-Li	DD	Bos	W	B-Li	U	3	Own	Tut	W	Timk	.....	7.1	.....	Lav	36x3½	36x5	Pru	Gdy	2900	Op	80
Noble A20	.....	Buda CTU	3¾x5¼	22.5	L	C	Chic	Fin	F	Strm	G	Pier	Full	DD	Eis	W	Full	U	3	M-E	.....	W	Shel	½Fl	7.8	23.4	Lav	36x3½	36x4	Bim	Fir	3200	148	85
Norwalk	1695	Lyco K	3½x5	19.6	L	T	Stan	C	S	Zen	V	.....	B.B.	.....	Del	Dy	G-Le	...	3	UM	Stan	W	Stan	½Fl	.....	.....	CAS	34x4*	34x4	.....	.....	1650	130	90
*Ogden A1	2295	Cont N	3¾x5	22.5	L	T	.....	.....	FS	Rayf	G	Pier	B-Li	DD	Bos	.....	B-Li	U	3	M-E	Tut	W	Shel	.....	7.7	.....	Gem	36x3½	36x5	Stn	.....	3400	136	70
Old Hickory	2175	Cont N	3¾x5	22.5	L	T	.....	Fin	F	Strm	V	Pier	B.B.	DD	Eis	.....	G-Le	U	3	Bld	.....	W	Timk	½Fl	7.7	23.1	Lav	36x3½	36x4	Own	Fir	3470	135	75
*Patriot Revere 1	1785	Cont N	3¾x5	22.5	L	T	BW	C	FS	Strm	V		B.B.	DD	AtK	Bj	Covt	A	3	Ther	Coop	W	Emp	½Fl	6.1	21.72	CAS	35x5	35x5*	Bim	Gdy	2800	128	60
*Pioneer AA, (Chicago)	1550	GBS	3¾x4¼	22.5	L	T	Chic	H	F	Zen	V	.....	DG	D	Dix	AL	G-Le	U	3	Ther	GC	W	IrM	¾Fl	6.1	25.1	Dit	32x4½*	32x4½*	Bim	Fir	2300	130	80
Rainier R-9	2350	Cont N	3½x5	19.6	L	T	Har	H	FS	Zen	...	Mon	.....	DP	Sim	.....	B-Li	...	3	Hart	Per	W	Shel	.....	.....	.....	Lav	32x3	32x4	Sch	.....	2800	125	80
*Republic 10	1655	Cont N-3¾	3¾x5	22.5	L	T	Own	C	FS	Strm	G	Rug	Full	DD	Bos	.....	Full	U	3	Hart	Math	I	Torb	D	7.1	20.9	Jac	34x3	34x4	Pru	Fir	2875	124	....
Royal 1	.....	Wis CAU	3¼x5	16.9	...	C	.....	H	...	Strm	...	Mon	B.B.	DD	Bos	Op	Own	...	3	Own	Mer	W	Timk	.....	.....	.....	Ros	34x4	34x5	.....	.....	.....	128	....
*Sandow G	2195	Cont N	3½x5	19.6	L	T	.....	Fin	FS	Strm	G	.....	.....	DD	Eis	.....	Full	U	3	Spic	GC	W	Shel	.....	7.8	23.1	Ros	34x3½	34x5	Stn	.....	3000	120	70
Service 220	2415	Buda R U	3½x5⅛	19.6	L	T	.....	Fin	FS	Strm	V	.....	Full	DD	Eis	.....	Full	U	3	Arv	.....	W	Timk	.....	7.75	23.25	Ros	34x3½	34x5	Bim	.....	3475	137	65
Shaw M4	2300	Cont N-¾	3¾x5	22.5	L	T	.....	H	FS	Zen	...	.....	B-Li	DD	Bos	.....	B-Li	...	3	Spic	Math	W	.....	½Fl	7.2	.....	Gem	35x5*	35x5*	.....	.....	2575	130	....
Signal NF	.....	Cont J4	3¾x5	22.5	...	C	.....	Fin	FS	.....	G	Pier	B-Li	DP	Eis	.....	.....	...	...	.....	.....	W	Timk	½Fl	7.2	.....	Ros	34x5*	36x6*	.....	.....	3550	132	....
*Southern 10	.....	Buda WU	3¾x5⅛	22.5	L	T	R-T	PT	S	Zen	...	Pier	Full	DD	Bos	.....	Full	U	3	.....	Shel	W	Shel	.....	.....	.....	Ros	34x3½*	34x4	.....	.....	.....	130	60
*Standard I-K	.....	Cont N	3¾x5	22.5	L	C	Lng	Fin	S	Strm	G	Mon	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Per	W	Timk	½Fl	7.2	23.97	Ros	36x6	36x6*	.....	Opt	3466	134	71.5
*Stewart 12	1650	H Sp 7000	3½x5	19.6		T	Bus	PT	FS	Zen	G	.....	B.B.	DP	Eis	Dy	Durs	U	3	Hart	Det	I	Cl	D	6.7	20.8	Ros	35x5	35x5	Wan	Fir	2780	130	70
Superior D	1800	Cont N-¾	3¾x5	22.5	L	T	Idl	C	FS	Strm	V	Pier	Full	DD	Eis	.....	Full	U	3	Arv	Tut	I	Torb	A	7.1	20.7	CAS	34x4½*	34x4	Sch	Fir	2950	124	75
*Transport 20	1850	Buda	3¾x5⅛	22.5	L	T	Mod	C	FS	Strm	G	Sim	Full	DD	Eis	.....	Full	U	3	Ther	Det	I	Cl	D	7.2	21.8	Jac	34x3½	34x4	.....	Fir	3070	130	70
Traylor B	2075	Buda WU	3¾x5⅛	22.5	L	C	GO	Fin	F	Zen	G	Pier	.....	DD	Spl	.....	Covt	...	3	Hart	Mer	W	Shel	½Fl	6.5	.....	Ros	34x3½	34x5	Sch	.....	3500	132	75
*Vim 31	2475	Her-CU-2	3¾x5⅛	22.5	L	G	McC	PT	F	Zen	G	.....	B-Li	DD	Dix	W	B-Li	U	3	Spic	Shel	W	Shel	.....	6.5	.....	Gem	35x5*	35x5*	Hoo	Fir	3790	125	....
White Hickory E	.....	Cont N-¾	3¾x5	22.5	L	C	Chic	Fin	FS	Strm	V	Sim	Full	DD	Eis	.....	Full	U	3	M-E	Shel	W	Timk	.....	6.2	18.6	Lav	35x5*	35x5*	Bim	Fir	3165	124	68
*Wichita K	2300	Own-B	3½x5	19.6	L	T	Per	C	S	Strm	G	.....	Own	C	.....	.....	.....	A	4	Own	Det	W	Shel	½Fl	7.8	40.56	Ros	36x3	36x4	Bim	.....	3650	144	80
Wilcox A	.....	Buda	3¾x5½	22.5	L	D	.....	PT	S	Strm	...	Dup	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Shel	W	Wis	½Fl	7.7	25.8	Gem	35x5*	35x5	.....	.....	3600	130	75
Winther Delivery Special	1795	H-Sp 7000	3½x5	19.6	L	T	Brm	PT	F	Strm	V	.....	War	DD	Wes	W	Warn	U	3	Pet	Det	I	Torb	D	6.6	21.4	Lav	34x4½*	35x5*	Mut	Fir	2700	135	66
1¼ Ton																																		
Commerce T	1350	Cont N	3¾x5	22.5	L	T	Lng	Fin	S	Zen	V	.....	DG	C	Eis	.....	Det	U	3	Spic	Det	I	Torb	.....	5.12	16.4	Jac	34x4½	34x4½	Dim	Fir	2800	127	80
Garford 25	.....	Buda WU	3¾x5⅛	22.5	L	C	Own	Fin	S	Strm	G	.....	B-Li	DD	Spl	.....	.....	A	3	Spic	Per	W	Timk	.....	7.75	.....	Ros	36x3½	36x4	.....	.....	3900	135	....
*Indiana 12	2290	Wau BUX	3¾x5¼	22.5	L	C	McC	Fin	F	Strm	G	Wau	B.B.	DD	Eis	.....	Covt	A	3	Acm	Shel	W	Shel	½Fl	7.8	28.47	Woh	34x3½	34x5	Bim	.....	4100	134	66
Koehler C	1985	H Sp 7000	3½x5	19.6	L	T	Own	.....	F	Zen	G	Sim	.....	DD	Eis	.....	MM	U	3	Spic	Math	I	Torb	D	7.1	23.1	Own	34x3	34x5	Wan	.....	3300	131	75
*Oneida A-9	2350	Oneida	3¾x5¼	22.4	L	C	Own	C	F	Strm	...	Own	Own	DD	....	.....	Own	U	3	Own	Math	W	Own	½Fl	6.2	24.8	.....	36x3½	36x5	.....	.....	4360	135	....
Reo F	1385	Own	4⅛x4½	27.2	L	C	Own	PT	S	John	G	.....	Own	DD	Rm	.....	Own	A	3	Own	.....	B	Own	Flot	4.6	17.2	Own	34x4½*	34x4½*	Pru	Fir	2560	128	62.5
1½ Ton																																		
Acason RB	.....	Wau BUX	3¾x5¼	22.5	L	P	Can	C	S	Sheb	V	Wau	Full	.....	Eis	.....	Full	U	4	Bld	Det	W	Timk	.....	9.25	44.4	Ros	36x3½	36x6	Bim	Opt	3850	142	....
*Ace	2750	Buda WU	3¾x5⅛	22.5	L	T	Mod	.....	S	Sheb	G	.....	Full	DP	AtK	W	Full	A	3	M-E	Math	W	Timk	Flot	7.1	30.1	Ros	35x5*	38x7*	Sch	Gdy	4750	144	80
*Acme F	2475	Cont J4	3¾x5	22.5	L	C	GO	Fin	F	Zen	V	Dup	B.B.	DP	Del	AL	Cott	U	3	Spic	Det	W	Timk	½Fl	7.75	31	Ros	34x3½	34x5	Bim	.....	3942	141	50
Aetna 115	2775	Wis CAU	3¾x5½	22.5	L	P	GO	PT	F	Zen	G	Pier	B.B.	DP	Del	.....	Cott	A	4	Full	Shel	W	Shel	½Fl	6	24	Ros	36x3½	36x5	.....	.....	3800	144	70
All American 1½	2195	H-Sp 7000	3½x5	19.6	L	T	.....	T	FS	Strm	...	.....	Det	DP	Sim	Dy	Cott	...	3	Bld	Det	I	.....	D	8.1	.....	Lav	34x4	34x5	.....	.....	.....	144	....
Apex D	1915	Buda RU	3¾x5⅛	22.5	L	T	GO	.....	F	Strm	V	.....	Full	.....	AuL	Op	Full	U	3	UP	Det	I	Torb	D	8.1	24.1	Lav	32x3½	32x4	.....	Fir	3070	130	70
Atco B	.....	Buda CTU	3¾x5¼	22.5	L	C	Chic	PT	F	Strm	G	.....	Full	D	Eis	W	Full	U	3	Hart	GC	W	Wis	W	7.25	.....	Ros	34x5†	36x6*	Smi	.....	3900	132	....
*Atterbury 20R	2775	Cont J4	3¾x5	22.5	L	C	Own	Fin	F	Zen	V	Sim	Full	DD	Ber	.....	Full	U	3	Spic	SP	W	Timk	¾Fl	7.75	31	Ros	34x3½	34x5	Arc	Fir	4500	144	71¾
*Available H 1½	2750	Own	4 x5⅛	25.6	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	Cott	A	4	Spic	.....	W	Timk	½Fl	7	39.7	Ros	36x3½	36x5	Sch	.....	4400	145	90
Beck Hawkeye B	2150	Cont N-¾	3¾x5	22.5	L	T	.....	H	S	Strm	G	Pier	Full	DD	Bos	.....	Full	U	3	Bld	Hig	I	Cl	D	6.1	.....	Lav	36x6*	36x6*	.....	.....	3200	144	75
*Bell E	2250	Buda	3¾x5¼	22.5	L	C	Chic	PT	F	Strm	V	Dup	B.B.	DP	Eis	.....	Det	U	3	UP	Det	Opt	Opt	Opt	8.8	25.7	Gem	35x5*	36x6*	Bim	Fir	3500	136	65
Belmont B	.....	Wis CAU	3¾x5	22.5	L	G	R-T	.....	F	Zen	V	Mon	B.B.	D	Eis	.....	.....	U	3	Ster	.....	I	Russ	D	7.7	23	Lav	34x4½*	34x5	E-O	Stn	3200	139	75
Bessemer H2	.....	Cont-N¾	3¾x5	22.5	L	T	.....	C	FS	Strm	G	.....	B.B.	DP	Bos	.....	B-Li	A	3	Arv	Per	I	Torb	D	8	27	Ros	36x3½	36x5	Sch	Fir	3600	134	63
Bridgeport A	2350	Buda WU	3¾x5⅛	22.5	...	...	Chic	PT	...	Strm	...	Pier	B.B.	.....	Eis	.....	Cott	U	3	Hart	.....	W	Wis	.....	7.25	.....	Ros	34x3½	36x6	Arc	.....	3800	...	67
Brockway S2	2250	Cont-N	3¾x5	22.5	L	T	Bus	PT	FS	Strm	V	Opt	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Mer	W	Shel	.....	7.8	26	Gem	36x3½	36x5	Hoo	.....	3550	140	70
Capitol G-1½	2750	Wis-CAU	3¾x5	22.5	L	C	GO	Fin	F	Strm	G	Sim	Det	DD	Bos	W	Cott	U	4	Ther	SP	W	Wis	½Fl	7.25	37.8	Ros	35x5*	38x7*	Det	Fir	4600	144	85
*Chicago C1½	2450	Her-CU2	3¾x5⅛	22.5	L	C	.....	T	F	Strm	G	Sim	B-Li	D	Bos	.....	B-Li	U	3	Pet	Math	W	Timk	½Fl	7.2	25.8	Gem	36x3½	36x5	Opt	Stn	3800	144	....
Climber A-2C	2650	H-Sp 7000	3½x5	28	L	T	Chic	ZZT	FS	Strm	V	.....	.....	DP	AtK	W	Mun	U	3	Hart	.....	I	Torb	.....	8	2.08	Ros	36x6*	38x7*	Roy	Fir	4150	146	75
*Clydesdale 42 C	2750	Own CU3	4 x5⅛	25.6	L	G	Own	PT	F	Strm	V	Own	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Stan	W	Timk	½Fl	7	23.3	Ros	36x3½	36x6	.....	.....	3495	151	72
Collier 19	.....	Cont N¾	3¾x5	22.5	T	P	Lng	PT	...	Zen	V	Pier	Full	DP	Eis	.....	Full	U	3	.....	Math	W	Timk	.....	7	31	Ros	36x4	36x6	Bim	Fir	4000	144	70
Comet 1½	1950	Lyco-K	3½x5	19.6	L	T	Can	PT	FS	Cart	G	.....	B.B.	.....	Del	Dy	Mun	U	3	UP	Mar	W	Stan	.....	.....	.....	CAS	34x4*	34x4	.....	Fir	2898	130	85
Commerce EP	2255	Cont N	3¾x5	22.5	L	T	Lng	Fin	S	Zen	V	.....	DG	C	Eis	.....	Det	U	3	Spic	Det	I	Torb	.....	7	22.9	Jac	36x6*	36x6*	Bim	Fir	3300	134	80
Concord A	2800	Buda ITU	4 x5½	25.6	L	C	Bus	PT	S	Zen	G	Mon	B-Li	.....	Eis	.....	B-Li	U	4	Spic	Per	W	Timk	.....	8.5	34	Ros	36x3½	36x5	Arc	Fir	4200	140	70
Corbitt D	2800	Cont N¾	3¾x5	22.5	L	T	McC	Fin	FS	Strm	V	Sim	Full	DD	Eis	.....	Full	U	3	Hart	Shel	W	Shel	½Fl	8.6	26	Ros	36x3½	36x5	Bim	Fir	4240	144	75
Dart S	2250	Buda WU	3¾x5⅛	22.5	L	T	Own	C	F	Zen	V	Pier	Full	DD	Eis	.....	Full	U	3	Spic	Per	W	Own	.....	7.5	22.5	Ros	34x3½	34x6	Pru	.....	3300	140	80
*Day Elder B	2300	Cont N¾	3¾x5	22.5	L	T	Bus	Fin	FS	Zen	G	.....	Covt	D	Eis	.....	Covt	U	3	Hart	IC	W	Shel	½Fl	8.75	32.03	Gem	34x3½	34x5	Jon	Fir	3500	144	70
*Dearborn F	2180	Buda WU	3¾x5⅛	22.5	L	T	.....	Fin	FS	Strm	V	.....	Full	DP	Bos	.....	Full	U	3	Arv	Tut	W	Wis	½Fl	8.5	23.75	Lav	34x4	34x5	.....	.....	3280	126	80
Defiance D	2550	Own	3¾x5	22.5	L	T	Per	PT	FS	Strm	...	.....	B.B.	DP	Eis	.....	G-Le	...	3	Arv	Det	I	Torb	D	.....	.....	.....	35x5*	36x6*	.....	.....	3200	140	85
*Dependable C	2350	Buda CTU	3¾x5¼	22.5	L	C	Lng	Fin	F	Zen	V	Mon	Full	DD	Dix	AL	Full	U	3	Acm	Per	W	Wis	½Fl	8.2	30.19	Ros	34x3½	34x5	Bim	Fir	4120	Op	70
*Diamond T–Farm Spec	2715	Hin	3¾x5¼	22.5	L	C	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	.....	Covt	U	3	Spic	Math	W	Wis	½Fl	8.2	30.19	Gem	36x3½	36x5	.....	.....	4000	144	....
*Diamond T—T	2450	Hin	3¾x5¼	22.5	L	C	GO	Fin	FS	Strm	V	Own	Covt	DD	Bos	.....	Covt	U	3	Spic	Math	W	Wis	½Fl	8.2	30.19	Gem	36x3½	36x5	.....	.....	4000	144	....
Douglas G–1½	2200	Buda WU	3¾x5⅛	22.5	L	S	Own	PT	P	Sheb	V	.....	Full	DP	Eis	.....	Full	U	3	Arv	Own	I	Torb	D	8	23.1	Ros	24x3½	34x5	Own	Fir	3725	126	65
Douglas GW	2200	Wei	3¾x5½	22.5	...	C	Own	PT	F	Sheb	V	.....	B.B.	DP	Eis	.....	G-Le	U	3	Arv	Own	I	Torb	D	8	23.1	Ros	24x3½	34x5	Own	Fir	3725	126	65
Erie 1½	.....	Buda-WU	3¾x5	22.5	L	T	McC	PT	FS	Strm	V	Pier	Full	D	Bos	.....	Full	U	4	Ster	Per	W	Shel	.....	.....	59.5	Ros	34x3½	36x5	Hoo	.....	4700	144	80
*Fageol 1½	3400	Wau-BUX	3¾x5¼	22.5	L	C	Mod	C	S	Zen	V	Wau	B.B.	DP	Dix	.....	Own	U	5	UP	Math	W	Stan	½Fl	5.6	59.5	Ros	34x3½	34x6	Pru	.....	4300	136	80
Famous B-12	2295	Cont N¾	3¾x5	22.5	L	T	Chic	PT	S	Strm	V	Mon	Full	DD	Eis	.....	Full	U	3	Bear	Det	I	Cl	D	7	21	Ros	36x3½	36x5	Bim	Fir	3600	138	75
*Federal TE	2725	Cont C4	4⅛x5¼	27.2	L	C	Own	PT	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Mat	W	Timk	.....	8.5	37.4	Gem	36x3½	36x5	Sch	Fir	4050	144	68.5
Forschler AX	2375	Cont N	3½x5	19.6	L	C	Own	.....	FS	Zen	...	Dup	Full	.....	Bos	Op	Full	...	3	Hart	Own	W	Shel	.....	.....	.....	Ros	36x3½	36x5	Smi	.....	3670	120	....
Front Drive C	2800	Buda CTU	3¾x5¼	22.5	L	G	EM	PT	S	Zen	...	Pier	B.B.	DD	Lor	Op	Own	A	3	Own	Own	W	Own	½Fl	8	32	Lav	34x5	34x5	Stn	.....	3200	Op	55
*Gary T	2550	Buda ETU	4 x5½	25.6	...	C	Chic	Fin	F	Mas	G	McC	Full	DD	Eis	.....	Full	U	3	Bld	Det	W	Timk	Flot	7.2	21.7	Ros	36x3½	36x5	Pru	Gdy	3800	144	....
Gersix M	3100	Buda ITU	4 x5½	25.6	L	C	Idl	C	F	Strm	V	Mon	B.B.	.....	Bos	.....	Cott	U	3	Bld	Tut	W	Shel	.....	7.7	31	Ros	36x3½	36x6	Jon	.....	4300	142	70
*GMC 31A	.....	Cont N	3¾x5	22.5	L	C	McC	PT	S	Mar	G	Mon	Own	DP	Eis	.....	Own	U	4	Own	.....	W	Timk	½Fl	9.2	37.5	Jac	36x3½	36x5	Own	.....	4205	130	74
*GMC 31B	.....	Cont N	3¾x5	22.5	L	C	McC	PT	S	Mar	G	Mon	Own	DP	Eis	.....	Own	U	4	Own	.....	W	Timk	½Fl	9.2	37.5	Jac	36x3½	36x5	Own	.....	4245	144	74
Graham Bros Speed Truck	2495	Cont N	3¾x5	22.5	L	T	Lng	PT	FS	Strm	G	Mon	Full	DD	Eis	Op	Full	U	3	Hart	Det	I	Torb	D	7	28	Lav	35x5*	36x6*	Det	Det	2950	133	80
*Gramm Bernstein 15	2050	Cont N	3¾x5	22.5	L	T	Own	Fin	S	Strm	G	.....	Full	DD	NE	NE	Full	U	3	Own	Per	I	Cl	D	7.6	22.8	Ros	36x3½	36x5	Bim	Fir	3800	138	90.5
*Gramm Bernstein 65	2725	Cont N	3¾x5	22.5	L	T	Own	Fin	S	Strm	G	.....	Full	DD	NE	NE	Own	A	3	Own	Per	W	Stan	½Fl	7.8	28	Ros	36x3½	36x5	Bim	Fir	4200	138	90.5
*Grant 17A	2675	Cont N	3¾x5	22.5	L	T	Mod	PT	FS	Cart	V	Pier	B-Li	DP	Spl	Re	B-Li	U	4	Pet	Per	I	Torb	D	5.5	22.9	Jac	35x5	38x7	Roy	Fir	3500	140	67
G. W. W. Farm Spec	2100	Wei	3¾x5½	22.5	H	P	Chic	.....	F	Sheb	G	.....	Full	.....	Del	Del	Full	U	3	Acm	GC	I	Cl	.....	7	.....	Woh	35x5	35x5	Roy	Fir	3200	142	65
Hahn CD	.....	Cont C4	4⅛x5	27.2	L	C	Own	.....	F	Strm	G	Pier	.....	DD	Spl	.....	B-Li	...	3	Spic	.....	W	Timk	.....	6	.....	Ros	36x3½	36x6	.....	.....	4800	130	65

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels
1½ Ton—Con'd		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23			
Harvey WEA	2550	Buda OU	4 1/16x5 1/2	27.2	L	G	.....	PT	F	Strm	G	Mon	Full	DD	Bos	.....	Full	U	3	Arv	Shel	W	Shel	.....	7.7	23.25	Ros	34x3 1/2	34x5	StM	.....	3850	128	80
Hawkeye K	2365	Buda QU	3 3/4 x5 1/2	22.5	L	C	.....	C	FS	Zen	G	Sim	Full	DD	Eis	.....	Full	U	3	Hart	Det	I	Cl	D	7.6	30.4	Ros	34x3 1/2	34x5	Bim	Fir	3750	148	70
Higrade B20	2500	Cont K4	4 1/16x5 1/4	27.2	L	G	Per	PT	FS	Zen	V	.....	Full	DP	Eis	AL	Full	U	3	Bld	Per	W	Shel	.....	7.7	31	Lav	36x6	36x6	Det	Fir	3100	130	66
Hoover 20A	.....	Cont N	3 1/16x5	19.6	L	G	Can	.....	F	Sheb	V	Pier	Full	.....	Dix	.....	Full	U	3	Arv	Shel	W	Shel	.....	7.8	23.4	Lav	36x4	34x5	E-O	Fir	3150	132	....
H.R.L.-R	3250	Hink	4 x5 1/4	25.6	L	C	Fed	Fin	F	Zen	G	Hin	B-Li	DP	Bos	GD	B-Li	U	4	Spic	Shel	W	Shel	D	7.75	30	Ros	36x4	36x7	Sch	.....	4560	144	....
Huffman B	2075	Cont N	3 3/4 x5	22.5	...	T	.....	C	F	Zen	G	Mon	Full	DD	Eis	.....	Full	U	3	.....	Per	I	Stan	D	8.6	.....	Lav	34x3 1/2	36x6	Roy	Fir	3200	140	85
Huffman C	1875	Buda WU	3 3/4 x5 1/2	22.5	...	T	.....	C	F	Zen	G	Mon	Full	DD	Eis	.....	Full	U	3	.....	Per	W	Torb	.....	12.2	.....	Lav	34x3 1/2	36x6	Roy	Fir	3350	140	85
*Hurlburt	2850	Buda ETU	4 x5 1/2	25.6	L	C	Own	.....	FS	Flch	G	Dup	B-Li	D	Eis	.....	B-Li	U	3	Spic	Per	W	Emp	.....	.....	.....	Ros	34x4	34x5	Wan	.....	4300	148	85
Independent E (Iowa)	2040	Cont N	3 3/4 x5	22.5	L	C	GC	PT	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	3	Bld	GC	I	Russ	D	8.2	.....	Lav	34x3 1/2	34x5	StM	Fir	3550	135	75
International K	2400	Own-K	3 1/16x5 1/4	19.6	L	C	Own	Fin	FS	Holl	G	Own	Own	DP	Bos	Own	Own	A	3	Own	....	I	Own	D	9	30	Own	36x3 1/2	36x5	Own	.....	3400	128	50
*Jumbo 15	2850	Buda CTU	3 3/4 x5 1/4	22.5	L	C	Own	Fin	F	Zen	G	.....	Full	D	NE	NE	Full	U	4	Arv	Per	I	Cl	D	7.2	28.8	Jac	36x3 1/2	36x5	.....	.....	4530	144	75
*Kalamazoo G	3100	Cont J4	3 3/4 x5	22.5	L	P	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Ful	A	4	Acm	Shel	W	Wis	1/2 Fl	8.2	41	Ros	36x4	36x5	Bim	.....	5080	144	80
Kearns 1½	2100	H-Sp 7000	3 1/2 x5	19.6	...	T	Own	H	S	Zen	...	Pier	B.B.	.....	Ber	Dy	G-Le	U	3	ME	Math	I	Torb	D	6.5	.....	Lav	34x3 1/2	34x6	Way	.....	3400	136	70
*Kelly-Springfield K31	3000	Own	3 3/4 x5 1/4	22.5	L	C	Lng	Fin	F	Zen	G	Pier	Own	C	Eis	W	Covt	A	3	Own	Per	C	Own	D	8.6	31.44	Gem	36x3 1/2	36x6	StM	.....	4420	144	89
*Kelly-Springfield K34	3000	Own	3 3/4 x5 1/4	22.5	L	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	W	Covt	A	3	Spic	Per	W	Shel	1/2 Fl	8.6	31.78	Gem	36x3 1/2	36x6	StM	.....	4670	144	89
*Kissel General Utility	2775	Own 40000	3 7/16x5 1/2	24.1	L	C	McC	PT	S	Strm	V	Pier	War	DP	Eis	.....	War	U	3	Spic	Mat	W	Shel	1/2 Fl	7.8	28.5	Jac	36x3 1/2	36x5	Pru	.....	4100	152	70.5
*Kleiber A	3100	Cont C4	4 1/16x5 1/4	27.2	L	C	Per	C	...	Strm	G	.....	.....	WD	Bos	.....	B-Li	A	4	Spic	.....	W	Timk	3/4 Fl	7.75	37.51	Ros	36x3 1/2	36x6	W-L	.....	5200	143	75
Larrabee-Deyo U	2400	Cont N 3/4	3 3/4 x5	22.5	L	C	Bus	Fin	S	Sheb	G	Sim	B-Li	DD	Bos	.....	B-Li	U	3	.....	Mer	W	Shel	1/2 Fl	7.6	25.5	Ros	34x3 1/2	34x5	StM	.....	4100	144	75
Leudinghaus W	2490	Wau BUX	3 3/4 x5 1/4	22.5	L	C	Own	Pit	FS	Sheb	G	Wau	B.B.	D	Spl	.....	Det	U	3	Spic	Tut	W	Wis	1/2 Fl	8.6	26.6	Lav	34x3 1/2	34x5	Sch	Fir	4300	150	70
Maccar L	2925	Cont C4	4 1/16x5 1/4	27.2	L	C	Own	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Mer	W	Timk	1/2 Fl	7	23.52	Ros	36x4	36x6	Sch	Fir	4800	Op	68
Mack AB	3000	Own	4 x5	25.6	L	C	Own	C	S	Zen	G	Own	B-Li	DD	Aer	.....	B-Li	U	4	Bld	Mer	C	Own	D	6.9	28.01	Own	36x4	36x3 1/2†	Sch	.....	4900	Op	68
Mack AB	3000	Own	4 x5	25.6	L	C	Own	C	S	Zen	G	Own	B-Li	DD	Aer	.....	B-Li	U	4	Spic	Mer	W	Timk	Flot	8.5	34.09	Own	36x4	36x3 1/2†	Sch	.....	4900	Op	68
Master JW	2690	Buda OU	4 1/16x5 1/2	27.2	L	T	Chic	PT	S	Mas	V	McC	Full	DP	Eis	.....	Full	U	3	Spic	Det	W	Timk	1/2 Fl	7.7	23.25	Ros	34x3 1/2	34x5	Pru	.....	3900	142	78
*Maxwell	1497	Own	3 1/16x4 1/2	21.	L	T	Own	PT	FS	.....	G	.....	Own	C	.....	.....	Own	U	3	Own	.....	W	Own	1/2 Fl	7.25	34.4	Own	35x5	35x5	.....	.....	2385	124	50
Menominee H	2725	Wis EAU	4 x5	25.6	L	T	.....	Fin	FS	Strm	G	Mon	Det	DP	Eis	.....	Cott	U	3	Spic	Tut	W	Wis	.....	8.25	30.36	Ros	36x3 1/2	36x5	Stn	Fir	.....	144	80
Moline 10	.....	Own NT	3 1/2x5	19.6	H	T	Mod	C	F	Till	G	Phar	.....	DP	Spl	.....	Own	U	3	Arv	Math	I	Torb	.....	8	38	Ros	34x5	36x6	.....	Fir	.....	130	....
Moreland 20B	3125	Cont C2	4 1/16x5 1/4	27.2	L	T	Own	C	FS	Mas	G	.....	Own	DD	Dix	.....	Own	A	4	Ther	US	W	Timk	.....	7	33.88	Ros	36x3 1/2	36x6	Smi	.....	4150	126	....
Napoleon 11	1860	Vict	3 1/2x5	19.6	H	T	Own	PT	F	Sheb	G	.....	Full	D	Con	AL	Full	U	3	Bld	Math	I	Torb	D	8	24	Lav	35x5*	36x6*	.....	Fir	3450	133	65
Nelson-LeMoon F1½	.....	Buda CTU	3 3/4 x5 1/4	22.5	L	C	Chic	Fin	S	Strm	G	Pier	B-Li	DD	Bos	W	B-Li	U	3	Own	Tut	W	Timk	.....	7	.....	Lav	36x3 1/2	36x6	Pru	Gdy	3400	Op	80
Noble B30	2025	Lyco K	3 1/2x5	19.6	L	T	Stan	C	FS	Zen	V	.....	B.B.	.....	Del	Dy	G-Le	...	3	UM	SPar	W	Shel	1/2 Fl	8.7	31.1	Lav	36x3 1/2	36x5	Bim	.....	4200	156	85
Norwalk	2675	Buda ITU	4 x5 1/2	25.6	L	G	R-T	PT	FS	Zen	V	Pier	Full	DD	Eis	.....	Full	U	3	Stan	.....	W	Stan	.....	.....	.....	CAS	34 3/16	34x5	.....	.....	1850	143	75
O. K. 1½T	2500	WisEU	4 x5	25.6	L	C	Chic	PT	FS	Strm	V	Mon	Full	DD	Bos	Op	Full	U	3	Hart	Cham	W	Wis	.....	8.25	.....	Ros	36x3 1/2	36x5	Bim	.....	.....	146	....
Old Reliable A	2915	Oneida	4 x5 1/4	25.6	L	C	Own	C	F	Strm	...	Own	Own	DP	.....	.....	Own	A	3	Own	Math	W	Own	1/2 Fl	7.75	33	.....	36x3 1/2	36x6	.....	.....	4150	138	90
Oneida B9	3000	Her CU2	4 x5 1/2	25.6	L	C	Chic	PT	F	Opt	...	Dup	Det	D	Opt	.....	Cott	...	3	Bld	Mar	W	Wis	.....	7	.....	Ros	36x3 1/2	36x5	.....	.....	5025	144	....
Orleans A	2880	HinHAA400	4 x5 3/4	25.6	L	C	Own	Fin	F	Strm	V	Hink	B-Li	DD	Bos	Op	B-Li	A	4	Spic	Per	W	Timk	1/2 Fl	7.7	37.51	Ros	34x3 1/2	34x5	Own	Fir	4000	140	85
*Paige 52-19	2195	Cont N3 3/4	3 3/4 x5	22.5	L	C	Lng	Fin	F	Strm	G	Hink	Covt	DD	Bos	W	Covt	A	4	Sned	Per	W	Shel	.....	7.8	25.97	Lav	34x3 1/2	34x5	Sch	.....	3100	133	80
Rainier R6	.....	HinHAA400	4 x5 1/4	25.6	L	C	Own	Fin	F	Strm	V	Hink	B-Li	DD	Bos	Op	B-Li	A	4	Spic	Shel	W	Shel	1/2 Fl	6.5	26	Ros	36x6*	36x6*	Hoo	.....	3800	133	69.1
Reliance 10A	3000	Wis CAU	3 3/4 x5	22.5	L	C	Fed	H	F	Zen	G	Sim	B-Li	DD	Bos	.....	B-Li	U	4	Spic	Shel	W	Shel	1/2 Fl	6.5	26	Ros	36x6*	38x7*	Smi	.....	.....	144	75
Reynolds 3A	.....	Wis EAU	4 x5	25.6	L	C	.....	H	...	Strm	...	.....	.....	D	Bos	Op	Own	...	...	Own	Mer	W	Timk	.....	.....	.....	Ros	34x4	34x5	.....	.....	.....	128	67
Rowe CW	3000	Wis CAU	3 3/4 x5	22.5	L	C	Fed	H	F	Zen	G	Sim	B-Li	DD	Bos	.....	B-Li	U	4	Spic	Shel	W	Shel	.....	7.8	23	Ros	34x3 1/2	34x5	StM	.....	3300	135	70
Royal 1½	.....	Wis EAU	4 x5	25.6	L	C	.....	H	...	Strm	...	.....	.....	D	Bos	Op	Own	...	...	Own	Mer	W	Timk	.....	.....	.....	Ros	34x4	34x5	.....	.....	.....	128	67
*Sandow CG	2485	Cont N 3/4	3 3/4 x5	22.5	L	T	.....	Fin	FS	Strm	G	.....	.....	DD	Eis	.....	Full	U	3	Spic	GC	W	Shel	.....	7.8	23	Ros	34x3 1/2	34x5	StM	.....	3300	135	70
*Schwartz BI	2490	Cont N 3/4	3 3/4 x5	22.5	L	T	Fed	H	FS	Strm	G	Mon	M-E	DD	Bos	.....	B-Li	U	3	M-E	Row	I	Torb	D	8	26.9	Ros	34x3 1/2	34x5	Sch	Fir	3750	140	....
*Schwartz BW	2600	Buda CTU	3 3/4 x5 1/4	22.5	L	T	Fed	.....	F	Strm	G	Mon	M-E	D	Bos	.....	Dun	U	3	M-E	Row	W	Thom		8	26.9	Ros	36x3 1/2	34x6	Sch	Fir	4400	140	....
*Selden 1½A	2460	Cont N	3 3/4 x5	22.5	L	T	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	.....	B-Li	U	3	Spic	Per	W	Timk	1/2 Fl	7	23.31	Lav	34x3 1/2	34x5	Arc	.....	3400	137	77
Service 31	2985	Buda IU	4 x5 1/2	25.6	L	C	.....	Fin	F	Strm	G	Sim	B.B.	DP	Eis	.....	.....	A	4	Spic	.....	W	Timk	.....	7.75	37.5	Ros	36x3 1/2	36x6	Bim	.....	4850	150	65
Service 36	3415	Buda HU	4 1/4 x5 1/2	28.9	L	C	.....	Fin	F	Strm	G	Sim	B.B.	DP	Eis	.....	.....	A	4	Spic	.....	W	Timk	.....	7	33.8	Ros	35x5*	38x7*	Bim	.....	4900	150	65
Signal H	2925	Cont C4	4 1/16x5 1/4	27.2	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	1/2 Fl	7.75	31	Ros	34x4	36x6	Hay	.....	4760	146	66
*Southern 15	.....	Cont N	3 3/4 x5	22.5	L	T	R-T	PT	S	Zen	...	Pier	Full	DD	Bos	.....	Full	U	3	.....	Shel	W	Shel	.....	.....	.....	Ros	34x3 1/2	35x5	.....	.....	.....	144	70
Sterling 1½	.....	Ster FU	4x5 3/4	25.6	L	C	Own	C	F	Rayf	V	Wau	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Mat	W	Timk	1/2 Fl	7	28	Ros	36x3 1/2	36x5	Pru	.....	4720	142	91
*Stewart 9	1995	Cont N 3/4	3 3/4 x5	22.5	...	C	Bus	PT	FS	Zen	...	.....	Full	DP	Eis	.....	B-Li	U	3	Ther	Shel	W	Shel	1/2 Fl	7.8	31.2	Lav	36x3 1/2	36x5	Bim	Gdy	3800	140	71
Stoughton B	2350	Wau BUX	3 3/4 x5 1/4	22.5	L	C	Own	Fin	FS	Strm	G	Wau	B-Li	DD	Eis	.....	B-Li	U	3	Hart	Mer	W	Timk	.....	8.5	31	Ros	36x3 1/2	36x5	Wan	.....	3500	129	60
Sullivan F	2350	Buda M	3 3/4 x4 1/2	22.5	L	T	.....	PT	F	Strm	G	.....	.....	C	Bos	.....	Covt	A	3	Hart	Mer	W	.....	1/2 Fl	7.7	20.15	CAS	34x4	34x4	Bim	Fir	3200	130	60
Texan TK 39	.....	Lyco K	3 1/2x5	19.6	L	T	.....	C	FS	Cart	V	.....	B-Li	D	Con	Bj	G-Le	U	3	UP	.....	W	.....	.....	7.7	23.25	Ros	36x3 1/2	36x5	Smi	.....	3750	135	80
*Tiffin GW	2695	Cont C4	4 1/16x5 1/4	27.2	L	C	Own	Fin	FS	Sheb	G	Pier	Full	DD	Bos	W	Full	U	3	Pet	Kal	W	Shel	.....	7.7	23.25	Ros	35x5*	38x7*	Pru	Fir	4520	142	70
Tower J1½	3000	Cont C4	4 1/16x5 1/4	27.2	L	C	Own	PT	S	Zen	G	.....	Full	DP	Eis	.....	Full	U	3	Bld	Det	W	Timk	1/2 Fl	7.25	29	Ros	35x5*	38x7*	Pru	Fir	4450	140	70
*Transport 30	2250	Cont N	3 3/4 x5	22.5	L	C	Mod	C	FS	Strm	G	Sim	Full	DD	Eis	.....	Full	U	3	Hart	Det	I	Cl	D	7.6	30.4	Jac	36x3 1/2	36x5	.....	Fir	3450	140	70
Traylor C	2875	Buda ITU	4 x5 1/2	25.6	L	G	GO	Fin	F	Zen	G	Pier	Covt	DD	Spl	.....	Covt	...	3	Hart	Mer	W	Shel	1/2 Fl	7.75	.....	Ros	36x4	36x6	Sch	.....	4700	138	78
Triangle A	2350	Wau BUX	3 3/4 x5 1/4	22.5	L	G	Per	ZZT	FS	Strm	G	Wau	Full	DD	Eis	.....	Full	U	4	UP	Det	I	Cl	.....	7.1	21	Gem	34x3 1/2	34x6	Roy	Fir	3750	144	60
Ultimate A	3200	Buda ITU	4 x5 1/2	25.6	L	C	Own	Fin	F	Strm	G	Pier	B-Li	DD	Eis	W	B-Li	U	4	Spic	Shel	W	Shel	.....	6.5	.....	Ros	36x3 1/2	36x4	Jon	Fir	4500	140	72
*United A-1½	2445	Buda CTU	3 3/4 x5 1/4	22.5	L	C	Own	Fin	F	Strm	G	Pier	B-Li	DD	Eis	W	B-Li	U	4	Spic	Shel	W	Shel	.....	6.5	.....	Ros	34x3 1/2	34x5	Pru	Fir	4000	145	70
U. S.-N	.....	Cont N	3 3/4 x5	22.5	...	C	Lng	Fin	...	Strm	V	.....	B-Li	DD	Eis	Op	B-Li	U	3	Bld	Bea	I	Cl	D	7.6	30.4	Ros	34x3 1/2	34x5	Sch	.....	3800	144	85
U. S.-N. C	.....	Cont N	3 3/4 x5	22.5	...	C	Lng	Fin	...	Strm	V	.....	B-Li	DD	Eis	Opt	B-Li	U	3	Opt	Shel	I	Cl	D	7.6	25.3	Lav	36x3 1/2	36x5	Sch	.....	3800	144	85
U. S.-N. P	.....	Cont N	3 3/4 x5	22.5	...	C	Lng	Fin	...	Strm	V	.....	B-Li	DD	Eis	Opt	B-Li	U	3	Opt	Shel	I	Cl	D	7.6	25.3	Lav	35x5*	38x7*	Sch	.....	3800	144	85
U. S.-N W	.....	Cont N	3 3/4 x5	22.5	...	C	Lng	Fin	...	Strm	V	.....	B-Li	DD	Eis	Op	B-Li	U	3	Opt	Shel	W	Shel	1/2 Fl	7.8	25.97	Lav	35x5*	38x7*	Sch	.....	3900	144	85
Velie 46	2200	Cont N 3/4	3 3/4 x5	22.5	L	C	Own	PT	FS	Strm	G	Mon	B.B.	D	Ber	.....	Durs	U	3	Arv	Mat	W	Shel	1/2 Fl	7.8	25.97	Lav	36x3 1/2	36x5	Sch	.....	3900	144	85
White Hickory H	.....	Cont N 3/4	3 3/4 x5	22.5	L	C	Chic	Fin	FS	Strm	V	Sim	Full	DD	Eis	.....	Full	U	3	Arv	Shel	I	Torb	D	8	37.4	Ros	36x3 1/2	36x5	Bim	Gdy	3650	133	80
Wichita L	2600	Wau BX	3 3/4 x5 1/4	22.5	L	P	Per	C	F	Strm	G	Wau	Own	C	.....	.....	.....	A	4	Own	Det	W	Timk	.....	8.5	25.5	Ros	36x3 1/2	36x5	Bim	Fir	3750	144	76
Wilcox B	.....	Own	4 1/4 x5	28.9	L	P	.....	.....	F	Strm	G	Dup	Own	C	Bos	.....	Own	A	4	Own	Shel	W	Shel	1/2 Fl	8.6	45.03	Ros	36x3 1/2	36x5	Bim	Fir	4100	144	80
Wilson F	2650	Own	3 3/4 x5 1/2	22.5	L	C	.....	Fin	FS	Mar	G	Pier	B.B.	DP	Eis	.....	Own	A	4	Ther	Per	W	Wis	1/2 Fl	8.25	39.9	Own	36x4	36x5†	.....	.....	4600	135	75
*Winther 39	2450	Wis CAU	3 3/4 x5	22.5	L	P	Brm	PT	F	Strm	G	.....	Full	DD	Eis	W	Full	U	3	Pet	Hart	I	Cl	D	7	21	Lav	34x3 1/2	34x5	Own	Fir	3800	136	70
*Winther 430	2850	Wis CAU	3 3/4 x5	22.5	L	P	Brm	PT	F	Strm	G	.....	Full	DD	Eis	W	Full	U	3	Pet	Hart	I	Cl	D	9	36	Lav	32x4	32x4	Own	Fir	4100	132	70
*Witt Will N	2150	Cont C4	3 3/4 x5 1/4	22.5	H	.....	.....	.....	...	Strm	G	.....	Full	DD	Eis	.....	B-Li	U	3	Spic	Del	W	Timk	.....	7	30.36	Ros	36x3 1/4	36x4	Arc	.....	3550	120	67
Wolverine C	.....	Cont N	3 3/4 x5	22.5	L	T	Lng	Fin	FS	Zen	G	Pier	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Del	W	Timk	.....	7	30.36	Ros	36x3 1/2	36x4	Hay	Gdy	3400	140	77
Wolverine D	.....	Cont N	3 3/4 x5	22.5	L	T	Lng	F	FS	Strm	G	Mon	Full	DP	Eis	GD	Full	U	3	UP	Tut	I	Russ	D	8.2	32.8	Gem	34x3 1/2	34x5	Hay	Gdy	4250	148	80
																									10.2	40.8	Gem	34x4	34x7	.....	.....			

2 Ton

Acason H	.....	Wau CU	4⅜x5¾	30.6	L	P	Can	C	FS	Sheb	V	Wau	Det	.....	Eis	.....	Cott	A	4	Bld	Det	W	Timk	.....	8.75	40.3	Ros	36x4	36x8	Smi	Opt	4354	150	....
Acme A	3050	Cont C4	4⅛x5¼	27.2	L	C	GO	Fin	FS	Rayf	V	Dup	B.B.	DP	Eis	.....	Cott	U	4	Bld	Det	W	Timk	Flot	8.5	44.2	Ros	36x4	36x7	Bim	.....	4840	148	50
Autocar F	2300	Own 2F	4¾x4½	18	L	C	Own	Fin	S	Strm	G	.....	Own	DP	.....	.....	Own	A	3	.....	.....	R	Own	Flot	8.3	33.2	Own	34x4	34x5	Hoo	.....	3430	97	65
Autocar G	2400	Own 2G	4¾x4½	18	L	C	Own	Fin	S	Strm	G	.....	Own	DP	.....	.....	Own	A	3	.....	.....	R	Own	Flot	8.3	32.2	Own	34x4	34x5	Hoo	.....	3690	120	65
Beck Hawkeye C	2450	Cont C4	4⅛x5¼	27.2	L	P	.....	C	F	Strm	G	Pier	Full	DD	Bos	.....	Full	U	3	Bld	Hig	I	Cl	D	9	.....	Lav	36x6*	40x8*	Hay	Fir	4000	144	70
Belmont C	.....	Wis TAU	4 x6	25.6	L	P	R-T	.....	F	Zen	V	Mon	B.B.	D	Eis	.....	.....	U	3	Ster	.....	I	Russ	D	8	24	Lav	36x4	36x7	E-O	Stn	4300	150	75
*Bethehem G	2595	Own G	4 x5¼	25.6	L	T	Liv	C	F	Zen	G	Pier	B.B.	DP	Bos	GD	Det	U	3	UP	Math	I	Russ	Flot	7.7	23.7	Lav	34x3½	34x6	Wan	.....	4450	135	....
Collier 20	.....	Cont C4	4⅛x5¼	27.2	T	P	Lng	PT	FS	Zen	V	Pier	Full	DP	Eis	.....	Full	U	4	.....	Math	W	Timk	.....	8.5	40.8	Ros	36x4	36x7	Bim	Fir	.....	152	70
Conestoga 30	2900	Cont N	3¾x5	22.5	L	T	E-M	ZZT	S	Strm	G	Mon	Full	DD	Sim	.....	Full	U	3	Ster	.....	W	Wis	.....	9.7	29	Ros	36x4*	36x4†	E-O	Stn	4000	138	80
Cook 41	3000	Her CU3	4 x5⅛	25.6	L	G	Own	PT	...	.....	G	.....	B.B.	DD	Ber	.....	.....	U	4	Bld	Per	I	Ken	D	.....	.....	Lav	36x6	38x7*	StM	Fir	5000	152	....
Corbitt C	3500	Cont C4	4⅛x5¼	27.2	L	C	McC	Fin	FS	Strm	V	Sim	B-Li	DD	Eis	.....	B-Li	U	3	Hart	Shel	W	Shel	½Fl	8.7	29.4	Ros	36x3½	36x7	Bim	Fir	5125	148	75
*Day Elder D	2750	Cont C2	4⅛x5¼	27.2	L	C	Bus	Fin	FS	Zen	G	Mon	Covt	D	Eis	.....	Covt	U	4	Hart	IC	W	Shel	½Fl	8.66	41.17	Gem	36x4	36x7	Jon	Fir	4250	144	70
Dearborn 48	2590	Buda WU	3¾x5⅛	22.5	L	T	.....	Fin	FS	Strm	V	.....	Full	DP	Bos	.....	Full	U	3	Hart	.....	W	Wis	½Fl	9.6	29.5	Dit	34x4½*	34x7	.....	.....	3500	148	85
Defiance E	2750	Own	3¾x5	22.5	L	T	Per	C	FS	Strm	...	.....	B.B.	DP	Eis	.....	G-Le	...	3	Arv	Det	I	Torb	D	.....	.....	Dit	35x5*	38x7*	.....	.....	3500	140	85
DeKalb E2	2100	Cont C4	4⅛x5¼	27.2	L	P	.....	PT	F	Mas	G	.....	Full	.....	Eis	.....	Full	U	3	KB	Mat	W	Timk	.....	8.5	28.	Ros	34x3½	34x6	Hay	.....	4150	146	68
Denby 134	2800	Cont N¾	3¾x5	22.5	L	T	Lng	PT	FS	Strm	G	Mon	Full	DD	Eis	.....	Full	U	4	Up	Det	I	Russ	D	8.85	42.5	Ros	36x3½	36x6	Hay	.....	3950	144	75.5
*Dependable D	2650	Buda ITU	4x5½	25.6	L	C	Lng	Fin	F	Zen	V	Mon	Full	DD	Dix	AL	Full	U	3	Acm	Per	W	Wis	½Fl	8.5	.....	Ros	36x4	36x7	Bim	Fir	5300	144	70
*Diamond T U	2835	Hin	4 x5¼	25.6	L	C	GO	Fin	FS	Strm	V	.....	Covt	DD	Bos	.....	Covt	U	4	Spic	Math	W	Timk	Flot	7.1	36.81	Gem	36x4	36x7	.....	.....	4800	160	....
Dorris K4	3400	Own	4¼x5½	28.9	H	C	McC	Fin	F	Strm	G	Own	Own	DP	Bos	.....	War	A	4	Spic	Row	W	Timk	Flot	7.75	38.67	Ros	36x4	36x7	Smi	Fir	5050	162	70
Douglas H	2800	Buda HTU	4¼x5½	28.9	L	C	Own	PT	F.	Sheb	V	Pier	Full	DP	Eis	.....	Full	U	3	Arv	Own	I	Torb	D	8.50	28.1	Ros	34x4	36x7	Own	Fir	3900	128	65
Douglas HW-2	3000	Buda HTU	4¼x5½	28.9	L	C	Own	PT	F	Sheb	V	Pier	Full	DP	Eis	.....	Full	U	3	Arv	Own	W	Wis	.....	8.75	29.1	.....	34x4	36x7	Own	Fir	3950	132	65
*Duplex A	2775	Hink HAA	4 x5¼	25.6	L	P	Mod	PT	F	Strm	G	.....	.....	DD	Wes	W	Covt	U	3	Pet	Penn	W	Shel	½Fl	.....	.....	Ros	35x5*	38x7*	Pru	.....	3900	145	....
*Duty 2	1490	Vict	3½x5	19.6	I	T	Eur	C	FS	Zen	G	.....	Covt	DP	Spl	.....	Covt	U	3	Acm	Cham	I	Russ	D	8.2	30.01	Dit	34x3½	34x5	Stn	Fir	3350	134	70
Eagle 100	1995	Buda CTU	3¾x5¼	22.5	L	P	.....	C	F	Zen	G	.....	.....	DD	Eis		Covt	U	3	M-E	Cham	I	Russ	D	8.8	31.8	Lav	36x6	38x7	Stn	Fir	4100	130	75
Erie 2	.....	Buda HTU	4¼x5½	28.9	L	C	McC	.....	FS	Strm	G	Pier	Full	D	Bos	.....	Full	A	4	Spic	Per	W	Shel	.....	.....	.....	Ros	34x3½	36x5	Hoo	Fir	5100	150	80
Fargo P	2800	Cont N	3¾x5	22.5	L	T	Own	Fin	S	Rayf	G	.....	.....	DP	Bos	.....	Full	U	4	Spic	Shel	I	Russ	D	9.5	.....	Jac	36x4	36x6	.....	.....	3900	144	80
*Federal UE	3025	Cont C4	4⅛x5¼	27.2	L	C	Own	PT	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Math	W	Timk	.....	9.25	40.7	Gem	36x4	36x7	Sch	Fir	4800	156	71.5
Forschler B	2750	Cont C4	4⅛x5¼	27.2	L	C	E-M	.....	FS	Zen	...	Dup	Full	.....	Bos	Op	Full	...	3	Hart	Own	W	Shel	.....	.....	.....	Ros	36x4	36x7	Smi	.....	4425	137	....
*Fulton C	2350	HSp7000	3½x5	19.6	L	T	GO	H	FS	Cart	G	.....	Covt	DP	Ber	.....	Covt	...	3	UP	.....	I	Russ	D	.....	.....	Lav	34x4	34x6	Hoo	.....	3300	137	68
Garford 70 H	.....	Buda HTU	4¼x5½	28.9	L	C	Own	Fin	F	Strm	G	Sim	B-Li	DD	Spl	.....	.....	A	4	Spic	Per	W	Timk	.....	7.75	.....	Ros	36x4	36x7	.....	.....	4590	144	....
Giant 16	3150	Cont C4	4⅛x5¼	27.2	L	P	Own	.....	FS	Sheb	G	Pier	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Math	W	Shel	.....	8.8	29.09	Ros	36x4	36x7	Wan	.....	4500	168	90
GMC 41A	.....	Cont C2	4⅛x5¼	27.2	L	C	McC	PT	F	Mar	G	Mon	Own	DP	Eis	.....	Own	U	4	Own	.....	W	Timk	Flot	9.2	37.5	Jac	36x4	36x7	Own	.....	4855	144	74
GMC 41B	.....	Cont C2	4⅛x5¼	27.2	L	C	McC	PT	F	Mar	G	Mon	Own	DP	Eis	.....	Own	U	4	Own	.....	W	Timk	Flot	9	37.5	Jac	36x4	36x7	Own	.....	4910	158	74
*Gramm-Bernstein 20	3175	Cont C2	4⅛x5¼	27.2	L	C	Own	Fin	S	Strm	G	Pier	Full	DD	NE	NE	Own	A	4	Own	Per	W	Shel	½Fl	7.7	36.7	Ros	36x4	36x7	Bim	Fir	5050	144	91
Hahn DE	.....	Cont C4	4⅛x5¼	27.2	L	C	Own	Fin	F	Strm	G	Pier	.....	DD	Bos	.....	B-Li	...	3	Spic	.....	W	Shel	.....	7	.....	Ros	36x4	36x7	.....	.....	4300	140	65
Hal-Fur D	2350	Hin HA-400	4 x5½	25.6	L	C	GO	PT	F	Strm	V	Hin	B.B.	P	Bos	W	B-Li	A	4	Pet	Per	W	Timk	½Fl	5.5	24	Gem	35x5*	35x5*	Stn	Fir	3400	Op	70
Hall 2½	3275	Cont C4	4⅛x5¼	27.2	L	P	Own	H	FS	Zen	G	Dup	B-Li	DP	Bos	.....	B-Li	U	3	Opt	Det	W	Timk	.....	7.7	.....	Gem	36x4	36x4	Smi		4825	Op	....
Hawkeye M	2915	Buda HU	4¼x5½	28.9	L	C	.....	C	FS	Zen	G	Sim	Full	DP	Eis	.....	Full	U	4	Hart	Det	I	Cl	D	8	43.2	Ros	36x4	36x6	Bim	Fir	4500	148	....
Hewitt-Ludlow	.....	Buda HTU	4⅛x5½	27.2	...	...	.....	.....	...	Strm	...	.....	B.B.	.....	Bos	.....	Cott	...	..	Spic	.....	W	Wis	.....	.....	.....	Ros	36x4	36x6	.....	.....	4200	140	....
H & M 2	.....	Her	3½x5	19.6	...	T	GO	.....	FS	Cart	G	.....	Full	.....	Bos	Dy	Full	U	4	Ther	Mat	I	Torb	D	Opt	Opt	Lav	34x4	38x7*	.....	Fir	3400	144	75
Independent F (Iowa)	2490	Cont K4	4⅛x5¼	27.2	L	C	GC	PT	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	4	Bld	GC	I	Russ	D	10	.....	Lav	34x4	34x6	StM	Fir	4500	146	75
Independent K, (Ohio)	.....	Cont L4	4½x5½	32.4	L	G	Lng	PT	...	Sheb	G	Pier	Full	DP	Eis	.....	Full	U	4	Spic	Mat	W	Wis	.....	10	48	Ros	36x5	36x10	.....	.....	5400	160	85
*Indiana 20	2950	Own 38	4⅛x5½	27.2	L	C	McC	Fin	F	Strm	G	Pier	B.B.	DD	Eis	.....	B-Li	A	4	Acm	Shel	W	Shel	½Fl	7.7	39.5	Woh	36x4	36x7	Day	.....	5360	150	68
*International G	2800	Own G	4¼x5	28.9	H	T	Own	Fin	FS	Ens	G	Own	Own	DP	Dix	Own	Own	A	3	Own	.....	I	Own	D	9	30	Own	36x4	36x6	Own	.....	4010	138	50
J and J-D	3250	Wis EAU	4 x5	25.6	L	G	Chic	Fin	F	Zen	G	Mon	B.B.	.....	Amr	Opt	Cott	U	4	UM	Math	I	Russ	.....	8.8	46	Lav	34x4	34x6	Bim	.....	4000	132	85
*Jumbo 20	3100	Buda CTU	3¾x5¼	22.5	L	C	Own	Fin	F	Zen	G	.....	Full	D	NE	NE	Full	U	3	Arv	Per	I	Cl	D	7.6	30.4	Jac	35x5*	38x7*	.....	.....	4510	144	75
Keldon 19	.....	Buda HU	4¼x5½	28.9	L	T	Eur	.....	F	Strm	G	Pier	Full	.....	Eis	.....	Full	U	4	Det	.....	I	Russ	D	1.7	.....	Ros	36x4	36x7	Smi	Fir	5100	144	80
*Keystone 2	2450	Buda WU	3¾x5⅛	22.5	L	C	McC	PT	S	Zen	G	Pier	Full	DD	Ber	.....	Full	U	3	Spic	Row	I	Russ	D	8.8	26.6	Ros	34x5*	38x7*	Hoo	Gdy	4000	144	75
Kimball B	3675	Wis TAU	4 x6	25.6	L	C	Flex	PT	F	Zen	V	Dup	B-Li	DP	Spl	W	B-Li	U	4	Spic	US	W	Shel	½Fl	6.5	26	Ros	36x4	36x7	Smi	Fir	4900	Op	66
King Zeitler	.....	Cont C4	4⅛x5¼	27.2	L	C	.....	.....	FS	Strm	G	.....	B-Li	DD	Bos	.....	B-Li	U	4	Ther	Tut	W	Timk	Flot	7.7	37	Lav	36x4	36x7	StM	.....	4600	150	80
Kleiber BB	3600	Cont C4	4⅛x5¼	27.2	L	T	Per	C	...	Strm	G	Pier	.....	WD	Bos	.....	B-Li	A	4	Spic	.....	W	Timk	Flot	7.75	37.51	Ros	36x4	36x7	W-L	.....	5600	153	75
Lange B	.....	Cont C4	4⅛x5¼	27.2	L	G	.....	H	S	Strm	...	Pier	.....	D	Bos	.....	Cott	...	3	.....	.....	C	Own	.....	.....	.....	Gem	36x4	36x6	.....	.....	5200	136	90
Luedinghaus K	2790	Wau RU4R	4¼x5¾	28.9	L	G	Own	PT	FS	Sheb	G	Wau	B.B.	.....	Spl	.....	Det	U	3	Spic	Tut	W	Wis	½Fl	8.6	26.6	Lav	36x4	36x7	Bim	.....	4400	145	80
Leudinghaus K-LS	2890	Wau RU4R	4¼x5¾	28.9	L	T	Own	PT	FS	Sheb	G	Wau	B.B.	.....	Spl	.....	Det	U	3	Spic	Tut	W	Wis	.....	8.6	26.6	Lav	36x4	36x7	Bim	.....	4500	170	80
Luverne BBL	.....	GBS	3¾x4¼	22.5	L	C	.....	C	S	Sheb	G	.....	.....	D	Bos	Dy	Det	U	3	UP	.....	I	.....	D	8	30	Lav	34x4*	34x5	Own	Fir	.....	136	....
Mack AB	3300	Own	4 x5	25.6	L	C	Own	C	S	Zen	G	Own	B-Li	DD	Aer	.....	B-Li	U	4	Bld	Mer	C	Own	D	6.9	28.01	Own	36x4	36x4†	Sch	.....	4900	Op	71
Mack AB	3300	Own	4 x5	25.6	L	C	Own	C	S	Zen	G	Own	B-Li	DD	Aer	.....	B-Li	U	4	Spic	Mer	W	Timk	Flot	8.5	34.09	Own	36x4	36x4†	Sch	.....	5000	Op	75.5
Marshall 2	.....	.....	3½x5	19.6	L	T	.....	.....	...	.....	...	.....	B.B.	.....	.....	.....	.....	U	3	.....	.....	W	.....	.....	.....	.....	.....	34x5	34x5	.....	.....	.....	132	....
Menominee D	3245	Wis TAU	4 x6	25.6	L	C	.....	Fin	FS	Strm	G	Mon	Det	DP	Eis	.....	Cott	U	4	Spic	Tut	W	Wis	.....	8.6	45.13	Ros	36x4	36x4*	Stn	Fir	.....	160	80
Mutual 2A	.....	Wis TAU	4 x6	25.6	...	...	.....	C	F	Strm	G	Dup	M-E	D	Bos	W	.....	A	4	Spic	Mat	W	Shel	.....	7.7	.....	Ros	36x4	36x8	Smi	Fir	5600	152	71
Nash 3018	2550	Own 4	3¾x5¼	22.5	L	C	.....	.....	F	Strm	G	Sim	B.B.	D	Eis	AL	.....	A	4	Own	Mat	I	Cl	D	9	39.6	Lav	34x4	34x6	AuW	.....	3850	144	73.5
Nash Quad 4017	3250	Buda HU	4¼x5½	28.9	L	C	.....	.....	F	Strm	G	Sim	B.B.	D	Eis	AL	.....	A	4	Spic	Mat	C	Own	D	8.5	42.3	Lav	36x5	36x5	.....	.....	6250	124	55
Netco D	3400	Cont C4	4⅛x5¼	27.2	L	C	R-T	PT	S	Zen	G	.....	B-Li	DP	Eis	.....	B-Li	U	3	Hart	Per	W	Timk	Flot	9.25	36	Ros	36x4	36x7	Arc	Gdy	5900	168	80
*Niles E	3000	Cont C4	4⅛x5¼	27.2	L	C	Mod	Own	...	Strm	G	Pier	B.B.	D	Eis	.....	Covt	A	3	Bld	IC	W	Timk	Flot	9.2	28	Gem	36x4	36x7	Hoo	Fir	5800	140	....
Noble C40	.....	Buda ITU	4 x5½	25.6	L	C	Chic	Fin	F	Strm	G	Pier	Full	DP	Eis	W	Full	U	3	M-E	Tut	W	Shel	½Fl	8.7	31.1	Lav	36x4	36x7	Bim	Fir	4500	160	85
Northway B2	.....	Own	4 x6	25.6	H	C	GO	C	F	Strm	V	Pier	Full	DP	Wag	W	Full	U	4	Spic	Per	W	Shel	½Fl	7.7	37.2	Ros	36x4	36x4†	Cla	.....	6050	Op	77
Northwestern WT	3300	Cont C4	4⅛x5¼	27.2	L	C	May	C	S	Strm	G	.....	Hart	C	Bos	.....	Covt	A	3	Bld	Shel	W	Shel	Flot	8.66	31.6	Ros	34x4	36x7	Wes	.....	4900	164	80
Oshkosh AA4	3850	H-Sp2700	3½x5	19.6	L	T	Own	C	FS	Zen	V	Dup	B-Li	DP	NE	NE	B-Li	U	4	Pet	Tut	B	Own	Flot	8.2	33	Ros	36x6*	36x6*	Bim	Fir	4200	165	60
Oshkosh A4	3750	H-Sp2700	3½x5	19.6	L	T	Own	C	FS	Zen	V	Dup	B-Li	DP	NE	NE	B-Li	U	4	Pet	Tut	B	Own	Flot	8.2	33	Ros	36x6*	36x6*	Bim	Fir	4200	130	60
*Packard EC	3850	Own	4 3/16x5½	28.1	L	C	.....	Fin	F	Own	P	Own	Own	DP	Dix	Bj	Own	A	4	Spic	.....	W	Own	Flot	7.25	33.3	Own	36x3½	36x6	Own	Own	5050	144	48.2
Parker F20	.....	Wis TAU	4 x6	25.6	L	C	Own	PT	F	Strm	G	Mon	B-Li	DD	Bos	W	Full	A	4	Bld	.....	W	Emp	Flot	7.75	37.2	Ros	36x6*	40x8*	Bim	.....	5200	150	71
*Patriot Lincoln	2450	Hink HAA	4 x5¼	25.6	L	G	Own	C	F	Strm	V	.....	Co	DP	Spl	.....	Full	A	4	Ther	Coop	W	Own	½Fl	7.2	34.8	Ros	34x3½	34x5	Bim	Gdy	3900	140	75
*Pierce Arrow X5	3750	Own	4 x5½	25.6	T	C	.....	.....	F	Strm	F	Own	.....	DD	Del	.....	.....	A	4	.....	.....	W	.....	.....	8.33	43.3	.....	36x4	36x4†	Day	.....	6400	150	85
Rainier R8	2900	Cont N¾	3¾x5	22.5	L	T	Har	H	FS	Zen	V	Mon	.....	DP	Sim	.....	B-Li	U	3	Hart	Per	W	Shel	.....	8.6	28.83	Ros	34x4	34x6	Sch	.....	3600	147	80
Reliance 20B	3200	Buda HTU	4¼x5½	28.9	L	C	Bus	PT	F	Strm	G	Pier	Full	DD	Eis	.....	Cott	A	4	Pet	Shel	P	Badg	.....	7.2	37.4	Ros	36x4	36x4†	Bim	Gdy	5500	156	90
Rowe CDW	3300	Wis EAU	4 x5	25.6	L	C	Fed	H	F	Zen	G	Sim	B-Li	DP	Bos	.....	B-Li	U	4	Spic	Shel	W	Shel	½Fl	7.7	31	Ros	34x4	36x3½†	Hoo	.....	4500	142	76.6
Royal	.....	Wis	4 x5	25.6	...	C	.....	H	.	Strm	...	Mon	B.B.	D	Bos	Op	Own	...	..	Own	Mer	W	Timk	D	.....	.....	Ros	36x4½	36x6	.....	.....	.....	...	....
*Sandow I	2575	Cont N¾	3¾x5	22.5	L	G	Own	Fin	FS	Strm	G	.....	.....	DD	Eis	.....	Full	U	3	Spic	GC	I	Torb	D	10	30	Ros	36x4	36x6	Stn	.....	3800	150	70
*Schacht	.....	Buda HU	4¼x5½	28.9	L	G	Own	PT	F	Sheb	G	Dup	Own	C	Bos	.....	Own	A	3	M&E	Nat	W	Own	Flot	.....	.....	Own	36x4	36x7	StM	.....	5500	156	70
*Southern	2890	Buda HTU	4¼x5½	28.9	L	T	Own	PT	S	Zen	...	Pier	Full	DD	Bos	.....	Full	U	4	.....	Shel	W	Shel	.....	.....	.....	Ros	36x4	36x7	.....	.....	.....	150	70
Sterling 2	.....	Ster FU	4x5¾	25.6	L	C	Own	C	F	Rayf	V	Wau	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Mat	W	Timk	Flot	7.7	37.26	Ros	36x4	36x6	Pru	.....	5000	142	91
*Stewart 7	2495	Cont C2	4⅛x5¼	27.2	...	G	Bus	Fin	FS	Zen	G	Pier	Full	DP	Eis	.....	Full	U	3	Hart	Det	I	Cl	D	9	27	Ros	34x4	34x7†	Cla	Fir	4460	156	72
Stoughton D	2800	Her CU3	4 x5⅛	25.6	L	C	Own	Fin	F	Strm	G	Dup	B-Li	DD	Eis	.....	B-Li	U	4	Ther	Shel	W	Shel	½Fl	8.66	35	Lav	36x4	36x7	Bim	Gdy	4600	140	70
Sullivan E	3350	Buda HTU	4¼x5½	28.9	L	A	.....	ZZT	F	Strm	V	.....	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Shel	W	Timk	.....	7.75	26	Ros	36x4	36x7	Wan	.....	4500	150	71
Sullivan EL	3375	Buda HTU	4¼x5½	28.9	L	A	.....	ZZT	F	Strm	V	.....	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Shel	W	Timk	.....	7.75	26	Ros	36x4	36x7	.....	.....	4500	168	71
Superior E	2750	Cont C2	4⅛x5¼	27.2	L	A	Idl	C	F	Strm	V	Pier	Full	DD	Eis	.....	Full	U	3	Arv	Tut	I	Torb	C	9	23.2	Ros	36x4	36x6	Sch	Fir	3600	144	75
*Traffic 4000C	1595	Cont N4	3¾x5	22.5	L	T	Own	C	FS	Cart	G	.....	Covt	DP	Bos	.....	Covt	U	3	Ther	Det	I	Russ	D	7	25.4	Own	34x3½	34x5	Opt	Fir	3175	132	85
Triangle C	2700	Wau BUX	3¾x5¼	22.5	L	C	Per	ZZT	FS	Strm	G	Wau	Full	DD	Eis	.....	Full	U	3	UP	Det	I	Cl	.....	8.1	24	Gem	36x4	36x6	Roy	Fir	4200	147	60
*Triumph H 2	2850	Buda CTU	3¾x5¼	22.5	L	C	Mod	H	F	King	V	Pier	B.B.	.....	Dix	.....	Cott	U	4	UP	Tut	....	Rus	.....	7.4	38.5	Lav	36x4	36x7	Stn	Stn	5000	144	70
*Twin City 2	.....	Buda ITU	4x5½	25.6	L	C	Mod	H	F	Sheb	V	Sim	Full	D	Bos	.....	Full	U	3	Arv	Math	I	Cl	D	8	32	Ros	36x6*	40x8*	Bim	Fir	4800	150	80

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels
2 Ton—Con'd		1		2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23			
Ultimate AJ	3200	Buda HTU	4¼x5½	28.6	L	C	Own	Fin	F	Strm	G	Pier	B-Li	DD	Eis	W	B-Li	U	4	Spic	Shel	U	Shel	.....	6.5	.....	Ros	35x5	38x7	Jon	Fir	4590	...	....
Vim 22	3150	Her CU2	3¾x5½	22.5	L	G	McC	PT	F	Zen	G	Dup	B-Li	D	Dix	....	B-Li	U	4	Spic	Shel	W	Shel	....	7.7	.....	Gem	36x4	36x6	Smi	....	4700	142	....
Wells C1	2800	Wei	4⅛x5¼	27.2	L	G	.....	.....	FS	Strm	...	Mon	.....	D	Ber	Dy	Cott	U	4	Acm	.....	I	.....	D	7	40	Lav	36x4	36x8	Smi	Stn	4400	168	82
White 20	3300	Own	3¾x5½	22.5	L	C	..	C	FS	Own	G	.....	Own	D	.....	.....	.....	A	4	Own	.....	R	Own	½Fl	.....	.....	Own	36x4	36x7	.....	Fir	4150	157	....
Wichita M	2800	Wau BX	3¾x5¼	22.5	L	G	Ier	C	F	Strm	G	Wau	Own	C	.....	.....	.....	A	4	Own	Det	W	Shel	½Fl	8.6	45.03	Ros	36x3½	36x6	Bim	Fir	4400	144	80
*Winther 49	3250	Wis EAU	4 x5	25.6	L	G	Brm	PT	F	Mas	V	.....	B.B.	DP	Eis	W	B-Li	A	4	Bld	Math	I	Cl	D	9	39	Ros	34x4	34x4†	Own	.....	5300	150	80
*Witt Will P	3250	Cont C4	4⅛x5¼	27.2	H	G	.....	C	FS	Zen	G	Pier	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Del	W	Tim	.....	7.75	.....	Ros	36x3½	36x7	Arc	.....	4550	144	70
2½ Ton																																		
*Ace 2½	3450	Buda HU	4¼x5½	28.9	L	C	Mod	.....	F	Sheb	G	Pier	Full	DP	AtK	W	Full	A	4	M-E	Math	W	Timk	Flot	8.50	34	Ros	36x6*	40x8*	Day	Gdy	5630	156	80
Aetna 125	3375	Wis UAU	4¼x6	28.9	L	G	GO	PT	F	Zen	G	Pier	B.B.	P	Bos	.....	Cott	A	4	Spic	Shel	W	Shel	½Fl	7.75	31	Ros	36x4	36x4†	.....	.....	4625	160	70
All American 2½	2395	HSp 7000	3½x5	19.6	L	T	.....	T	F	Strm	...	.....	Det	DP	Sim	.....	Cott	...	4	Hart	Per	I	.....	D	.....	.....	Lav	34x4	34x6	.....	.....	Opt	Op	....
American	3575	Wis	4 x6	25.6	L	G	GO	Fin	F	Strm	G	Pier	Det	D	Eis	.....	Covt	A	3	Acm	P	W	Wis	½Fl	8.6	.....	Lav	36x4	34x4†	Smi	.....	5000	158	....
*Apex E	2695	Buda HU	4¼x5½	28.9	L	C	GO	.....	F	Strm	V	Dup	Full	.....	Eis	Op	Full	U	3	UP	Det	I	Torb	D	9	27	Lav	36x4	36x6	.....	Fir	4500	150	70
Armleder HW	.....	Buda HTU	4¼x5½	28.9	L	P	Lng	Fin	F	Zen	G	.....	Full	DD	Bos	.....	Full	U	4	Spic	Math	W	Timk	Flot	9.25	44	Ros	36x4	36x7	StM	.....	4650	166	80
Atco A	.....	Bud HU	4¼x5½	28.9	L	C	Chic	PT	F	Strm	G	Pier	Full	D	Eis	.....	Full	A	4	Hart	Shel	W	Wis	.....	8.7	.....	Ros	36x4	36x7	Smi	.....	4900	150	....
*Atterbury 7CX LWB	3675	Cont C4	4⅛x5¼	27.2	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U	4	Spic	SP	W	Timk	Flot	9.25	37	Gem	36x4	36x4†	Arc	Fir	5280	171	74.5
*Atterbury 7CX STD	3575	Cont C4	4⅛x5¼	27.2	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U	4	Spic	SP	W	Timk	Flot	9.25	37	Gem	36x4	36x4†	Arc	Fir	5360	153	74.5
*Available 2 ½	3475	Own	4 x5½	25.6	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	Cott	A	4	Spic	.....	W	Timk	Flot	7.75	34.66	Ros	36x4	36x8	Sch	.....	4750	152	90
*Bell O	2750	Buda HU	4¼x5½	28.9	L	C	Chic	PT	F	Strm	V	Dup	B.B.	DP	Eis	.....	Det	U	3	UP	Det	Opt	Opt	Opt	8	38.4	Gem	34x5	34x7	Bim	Fir	4200	146	65
Bessemer J2	.....	Cont C4	4⅛x5¼	27.2	L	C	.....	C	FS	Strm	G	Pier	B.B.	DP	Bos	.....	B-Li	A	4	Arv	Per	I	Torb	D	8	32	Ros	36x4	36x4†	Sch	Fir	4600	158	67
Betz D2	.....	Buda HTU	4¼x5½	28.9	L	G	.....	.....	F	Strm	...	Pier	B-Li	.....	Bos	.....	B-Li	...	4	UM	Tut	W	Timk	Flot	.....	.....	Ros	36x4	36x7	.....	.....	4750	150	75
*Bridgeport 2½B	2850	Buda HTU	4¼x5½	28.9	L	G	Own	.....	FS	Strm	...	Pier	B.B.	D	Eis	.....	.....	U	4	Hart	.....	W	Shel	.....	8.25	.....	Ros	36x4	36x7	Arc	.....	5500	156	70
Brinton F	3400	Cont C4	4⅛x5¼	27.2	L	C	Bus	Fin	F	Strm	G	Pier	B-Li	D	Bos	.....	B-Li	U	3	Spic	Tut	W	Timk	Flot	.....	33.6	Ros	36x4	36x6	Sch	.....	4600	150	....
Brockway K4	3200	Cont C4	4⅛x5¼	27.2	L	C	Bus	PT	FS	Strm	G	Opt	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Mer	W	Timk	.....	8.5	34.	Gem	36x4	36x7	Hoo	.....	4700	152	80
Capitol H 2½	3450	WisUAU	4¼x6	28.9	L	C	GO	Fin	F	Strm	G	Sim	Det	DD	Bos	....	Cott	U	4	Ther	Sp	W	Wis	½Fl	8.66	45	Ros	36x4	36x8	Det	.....	5200	156	85
Capitol K2½	3850	Wis UAU	4¼x6	28.9	L	C	GO	Fin	F	Strm	G	Sim	Det	DD	Bos	W	Cott	U	4	Ther	SP	W	Wis	½Fl	7	36.4	Ros	36x6*	42x9*	Det	Fir	5100	156	85
*Chicago C2½	2800	Her CU3	4 x5½	25.6	L	C	.....	PT	F	Strm	G	Sim	B-Li	D	Bos	.....	B-Li	U	4	Pet	Math	W	Timk	Flot	8.5	34	Gem	36x4	36x7	Opt	Stn	4500	156	....
*Clydesdale 65EC	3775	Own MU3	4½x5½	32.4	L	G	Own	PT	F	Strm	V	Own	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Stan	W	Timk	Flot	8.5	41.1	Ross	36x4	36x8	Smi	.....	5540	163	73
Collier 22	.....	Cont C4	4⅛x5¼	27.2	T	G	Lng	PT	FS	Zen	V	Pier	Full	DP	Eis	.....	Full	U	4	.....	Math	W	Timk	.....	8.5	40.8	Ros	36x4	36x4†	Bim	Fir	5550	165	...
*Columbia G	2850	Hink HAA	4 x5¼	25.6	L	C	Lng	Fin	F	Strm	V	Hink	Det	DP	Dix	W	Cott	A	4	Spic	Per	I	Russ	D	9.5	48.8	Own	36x4	36x7	Det	Fir	4250	148	40
Concord B	3400	Buda HTU	4¼x5½	28.9	L	C	Bus	Pt	S	Zen	G	Mon	B-Li	DP	Eis	.....	B-Li	U	4	Spic	Per	W	Timk	.....	8.5	34	Ros	36x4	36x4†	Arc	Fir	4600	150	70
Corbitt B	3650	Cont C4	4⅛x5¼	27.2	L	C	Lng	Fin	FS	Strm	V	Sim	B-Li	DD	Eis	.....	B-Li	U	4	Hart	Shel	W	Shel	½Fl	8.7	35	Ros	36x4	36x7	Bim	Fir	5325	152	75
Dart M	3000	Buda HU	4¼x5½	28.9	L	C	Own	C	F	Zen	G	Pier	Full	DD	Eis	.....	Full	U	4	Spic	Per	W	Own	.....	8.5	40.8	Ros	36x4	36x7	Pru	.....	4800	150	80
*Day Elder C	2950	Buda HTU	4¼x5½	28.9	L	C	Bus	Fin	F	Zen	G	Mon	Covt	D	Eis	.....	Covt	U	4	Hart	IC	W	Shel	½Fl	8.75	41.56	Gem	36x4	36x7	Jon	Fir	5000	150	70
DeKalb E2½	2600	Cont C4	4⅛x5¼	27.2	L	G	.....	PT	F	Mas	G	Co	Full	DD	Eis	.....	Full	U	3	KB	Math	W	.....	Flot	9.3	33	Ros	36x5	36x6	Hay	.....	4800	144	79
Dependable E	2950	Buda HTU	4¼x5½	28.9	L	C	Lng	Fin	F	Zen	V	Mon	Full	DD	Dix	AL	Full	A	4	Acm	Per	W	Wis	½Fl	8.6	.....	Ros	36x4	36x7	Bim	Fir	5600	157	70
Doane 2½	.....	Wau R	4¼x5¾	28.9	...	C	...	C	S	Mas	G	Wau	.....	DD	Bos	.....	.....	U	3	.....	.....	C	Own	D	7.7	.....	Lav	36x5	36x7	.....	.....	5000	147	79
*Erie 2½	.....	Buda HTU	4¼x5½	28.9	L	C	McC	.....	FS	Strm	G	Pier	Full	D	Bos	.....	Full	A	4	Spic	Per	W	Shel	.....	.....	.....	Ros	36x6*	36x8*	Wan	Fir	5760	150	80
*Fageol 3400	3900	Wau RU4R	4⅜x5¾	30.6	L	C	Mod	C	F	Zen	G	Wau	B-Li	DD	Dix	.....	Own	A	5	Spic	Math	W	Timk	Flot	5.6	59.5	Ros	34x4	36x7	Stn	.....	4600	144	80
*Gary J	3150	Buda ETU	4¼x5½	28.9	L	C	Chic	Fin	F	Mas	G	McC	Full	DD	Eis	.....	Full	U	4	Spic	Det	W	Timk	Flot	8.5	41	Ros	36x4	36x7	Pru	Gdy	4850	148	....
Gersix K	3500	Buda HTU	4¼x5½	28.9	L	C	Idl	C	F	Strm	V	Mon	B.B.	.....	Bos	.....	Cott	U	3	Bld	Tut	W	Own	.....	9.6	39	Ros	36x4	36x7	Jon	.....	5200	150	75
*Gramm-Bernstein 25	3575	Hink	4¼x5½	28.9	L	C	Own	Fin	F	Strm	V	Hink	Own	DD	Eis	NE	Own	A	4	Own	Per	W	S-Par	½Fl	7.7	36.7	Ros	36x4	36x4†	Smi	Fir	6800	150	91.3
Hahn EE	.....	Cont E4	4½	32.4	L	C	Own	Fin	F	Strm	G	Pier	.....	DD	Bos	.....	B-Li	...	3	Spic	.....	W	Timk	.....	7.7	.....	Ros	36x4	36x8	.....	.....	4800	145	65
Harvey WFA	3300	Buda HU	4¼x5½	28.9	L	G	.....	ZZT	FS	Strm	G	Mon	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	.....	7.7	31	Ros	36x4	36x7	Sch	.....	5300	150	80
*Hendrickson I	3150	Buda HU	4¼x5½	28.9	L	C	.....	.....	F	Strm	G	McC	.....	D	Dix	.....	Full	A	4	Ther	Tut	W	Timk	.....	7.7	37.2	Ros	36x4	36x7	Stn	.....	.....	Op	80
Hewitt Ludlow	.....	Buda HU	4¼x5½	28.9	...	...	.....	.....	F	Strm	...	.....	B.B.	.....	.....	.....	Cott	...	4	Spic	.....	W	Wis	.....	.....	.....	Ros	36x4	36x7	.....	.....	4800	150	....
H. R. L., H	3650	Hink HAA	4 x5¼	25.6	L	C	Fed	Fin	F	Zen	G	Hink	B-Li	DP	Bos	GD	B-Li	U	4	Spic	Shel	W	Shel	.....	8.75	30.	Ros	36x4	36x4†	Sch	.....	5310	154	....
*Hurlburt 2½	3750	Buda FTU	4¼x5½	28.9	L	G	Own	.....	F	Flch	G	Dup	B-Li	D	Eis	.....	B-Li	U	3	Spic	Per	W	Own	.....	9.6	39	Ros	36x4	36x4	Wan	.....	5600	170	85
Independent H, (Ohio)	.....	Cont K4	4⅛x5¼	27.2	L	G	Lng	PT	F	Sheb	G	Pier	Full	DP	Eis	.....	Full	U	3	Spic	Math	W	Wis	.....	9.6	39	Ros	36x4	36x8	Day	.....	4600	148	85
*Indiana 25	3150	Own 38	4⅛x5½	27.2	L	C	McC	Fin	F	Strm	G	Pier	B.B.	DD	Eis	.....	B-Li	A	4	Acm	Shel	W	Shel	½Fl	7.75	39.5	Woh	36x4	36x8	Day	.....	5850	156	73
*Jumbo 25	3450	Buda HU	4¼x5½	28.9	L	C	Own	Fin	F	Zen	V	Dup	Full	D	NE	.....	Full	U	4	Arv	Per	I	Cl	D	9	43.2	Jac	36x4	36x7	Day	.....	5190	152	75
*Kalamazoo H	3700	Wis TAU	4x6	25.6	L	G	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Full	A	4	Acm	Shel	W	Shel	½Fl	8.75	42.8	Ros	36x4	36x8	Smi	.....	6200	160	80
*Kankakee 2½	3175	Cont 6 9N	3½x5¼	29.4	L	C	Spli	H	FS	Zen	V	.....	War	DD	Del	DL	Warn	U	3	Acm	Tem	I	Russ	D	7.4	22.2	Ros	36x6	40x8*	Bim	Gdy	4200	170	70
Karavan	.....	Buda X TU	4¼x6	28.9	L	C	Fed	ZZT	F	Zen	G	Dup	B-Li	DD	Ber	.....	B-Li	A	4	Spic	Shel	W	Shel	.....	7.75	37.51	Ros	36x4	36x8	Smi	.....	5700	148	80
*Kelly Springfield K35	3500	Own	3¾x5½	22.5	L	C	Lng	Fin	F	Zen	G	Pier	Own	C	Eis	W	Covt	A	3	Own	Per	C	Own	D	10.6	35.04	Gem	36x4	36x4†	StM	.....	5000	144	89
Kelly Springfield K36	3500	Own	3¾x5½	22.5	L	C	Lng	Fin	F	Zen	G	Pier	Own	D	Eis	W	Covt	A	3	Spic	Per	W	Shel	½Fl	10.3	34.04	Gem	36x4	36x4†	StM	.....	5145	144	89
Kimball C	3975	Wis UAU	4¼x6	28.9	L	C	Flex	PT	F	Zen	V	Dup	B-Li	DP	Spl	W	B-Li	A	4	Spic	US	W	Shel	½Fl	7.7	37.31	Ros	36x4	36x7	Smi	Fir	5100	Op	66
*Kissel Freighter	3475	Own 50000*	4½x5½	28.9	L	C	McC	PT	S	Strm	V	Pier	War	DP	Eis	.....	War	A	4	Spic	Mat	W	Timk	Flot	8.5	42.5	Jac	36x4	36x7	Pru	.....	5100	168	74
*Kleiber B	4200	Cont E4	4½x5½	32.4	L	C	RT	PT	...	Strm	G	Sim	.....	WD	Bos	.....	B-Li	A	4	Spic	.....	W	Timk	¾Fl	7.75	37.51	Ros	36x5	36x8	WL	.....	6000	160	75
Koehler M	3365	Her CU3	4 x5½	25.6	L	C	Own	.....	F	Zen	G	Sim	B-Li	D	Eis	.....	B-Li	A	4	Spic	Math	W	Timk	.....	9.25	37	Jac	36x4	36x7	Wan	.....	5050	162	75
Larrabee-Deyo K	3400	Cont C4	4⅛x5¼	27.2	L	C	Bus	Fin	S	Sheb	G	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Opt	Mer	W	Shel	½Fl	8.7	35	Ros	36x4	36x7	Hoo	.....	5700	176	....
*L.M.C. 2-20	2540	Cont C2	4⅛x5¼	27.2	L	C	.....	Fin	S	Strm	P	Pier	B.B.	.....	Bos	.....	Det	A	4	Ther	Math	I	Russ	D	8.8	38.72	Lav	36x4†	36x4†	Bim	.....	4500	164	80
Maccar H 2	3750	Cont E4	4½x5½	32.4	L	C	Own	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Mer	W	Timk	Flot	7.75	31.08	Ros	36x4	36. 4†	Sch	Fir	5250	162	70
*Master D	3540	Buda HU	4¼x5½	28.9	L	C	Chic	PT	FS	Mas	V	McC	Full	DP	Eis	.....	Full	U	4	Spic	Det	R	Walk	Flot	8	32	Ros	34x4	36x7	Wal	.....	4500	144	....
*Master DL	3640	Buda HU	4¼x5½	28.9	L	C	Chic	PT	FS	Mas	V	McC	Full	DP	Eis	.....	Full	U	4	Spic	Det	R	Walk	Flot	8	32	Ros	34x4	36x7	Wal	.....	4600	170	....
*Master W	3290	Buda HU	4¼x5½	28.9	L	C	Chic	PT	FS	Mas	V	McC	Full	DP	Eis	.....	Full	U	4	Spic	Det	W	Timk	Flot	8.5	34	Ros	34x4	36x7	Pru	.....	4560	144	76
*Master WL	3390	Buda HU	4¼x5½	28.9	L	C	Chic	PT	FS	Mas	V	McC	Full	DP	Eis	.....	Full	U	4	Spic	Det	W	Timk	Flot	8.5	34	Ros	34x4	36x7	Pru	.....	4600	170	80
Moreland 20C	3900	Cont E4	4½x5½	32.4	L	C	Own	C	FS	Mas	G	.....	Own	DD	Dix	.....	Own	A	4	Ther	US	W	Timk	.....	6.8	32.9	Ros	36x4	36x8	Smi	.....	5380	144	....
Nelson & LeMoon F2½	.....	Cont C4	4⅛x5¼	27.2	L	C	Chic	Fin	S	Strm	G	Pier	B-Li	DD	Bos	W	B-Li	U	3	Own	Tut	W	Timk	.....	7.7	.....	Lav	36x4	36x7	Pru	Gdy	4100	Op	80
Netco H	3800	Cont E4	4½x5½	32.4	L	C	RT	PT	S	Zen	G	.....	B-Li	DP	Eis	.....	B-Li	A	4	Hart	Per	W	Timk	Flot	7.75	39	Ros	36x4	36x8	Arc	Gdy	6500	168	75
Noble D50	.....	Buda HTU	4¼x5½	28.9	L	C	Chic	Fin	F	Strm	G	Pier	Full	DP	Eis	W	Full	A	4	M-E	Tut	W	Shel	½Fl	8.7	42	Lav	36x4	36x8	Bim	Fir	5000	176	85
*Ogden C2	2995	Cont C 2	4⅛x5¼	27.2	L	C	.....	.....	FS	Rayf	G	Pier	B-Li	DP	Bos	.....	B-Li	A	4	M-E	Tut	W	Shel	.....	8.7	.....	Gem	36x4	36x7	Stn	.....	5600	160	70
O. K. 2½ T	3450	Buda HTU	4¼x5½	28.9	L	G	RT	PT	FS	Zen	V	Pier	Full	DD	Eis	.....	Full	A	4	Hart	Cham	W	Wis	.....	8.66	.....	Ros	36x4	36x7	Bim	.....	.....	150	....
Old Reliable B	3600	Wis UAU	4¼x6	28.9		C	Chic	PT	FS	Strm	V	Mon	Full	DD	Bos	.....	Full	A	4	Spic	Shel	W	Shel	½Fl	8.25	37.2	Ros	34x4	36x4†	StM	.....	5850	166	70
Oneida C9	3390	Oneida	4 x5¼	25.6	L	C	Own	C	...	Strm	...	Own	Own	DP	....	.....	Own	A	4	Own	Math	W	Own	½Fl	8.6	41.5	.....	36x4	36x7	.....	.....	5495	160	....

Orleans B.	3500	Her CU3	4¼x5½	28.9	L	C	Chic	PT	F	Opt	...	Dup	Det	D	Opt	.....	Cott	...	4	Bld	Mar	W	Wis	.....	8	.....	Ros	36x4	36x7	.....	.....	.....	160	80
*Paige 54-20.	3400	Hin HA500	4¼x5½	28.9	L	C	Own	Fin	S	Strm	V	Sim	B-Li	DD	Bos	Op	B-Li	A	4	Spic	Per	W	Shel	½Fl	8.7	42.35	Ros	34x4	34x8	Day	Fir	5200	150	85
Pittsburgh B.	.....	Cont C4	4⅛x5¼	27.2	L	C	GC	Fin	F	Strm	V	Mon	B-Li	DP	Bos	.....	B-Li	U	4	Spic	IC	W	Shel	.....	8.7	35.8	Ros	36x5	36x7	Smi	.....	5500	160	67.5
Republic 19.	2795	Cont C2	4⅛x5¼	27.2	L	C	Own	C	FS	Strm	G	Phar	Full	DD	Bos	.....	Full	U	4	Spic	Math	I	Torb	D	8	36.4	Jac	36x4	36x7	Pru	Fir	4150	144	....
Reynolds 5A.	.....	Hin HAA500	4¼x5½	28.9	L	C	Lng	Fin	F	Strm	G	Hink	Covt	DD	Bos	W...	Covt	A	4	Sned	Per	W	Shel	.....	7.7	36.8	Lav	36x4	36x8	Smi	.....	.....	154	75
Rowe CDW.	3575	Wis EAU	4 x5	25.6	L	C	Fed	H	F	Zen	G	Sim	B-Li	DP	Bos	.....	B-Li	U	4	Spic	Shel	W	Shel	½Fl	7.7	31	Ros	34x4	36x4†	Hoo	.....	4500	162	70.7
Royal.	.....	Wis UAU	4½x6	29.8	L	C	.....	H	...	Strm	...	Mon	B.B.	D	Bos	Op	Own	...	4	Own	Mer	W	Timk	.....	.....	.....	Ros	36x4½	36x6	.....	.....	.....	132	....
*Sandow J.	3175	Cont C4	4⅛x5¼	27.2	L	G	.....	Fin	FS	Strm	G	Mon	B.B.	DD	Bos	.....	B-Li	U	4	Spic	GC	W	Timk	.....	9.2	31	Ros	36x4	36x7	Stn	.....	4500	165	70
Sanford W25.	3350	Cont C4	4⅛x5¼	27.2	L	G	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Per	W	Shel	½Fl	8.7	34.8	Ros	36x4	36x4†	Hoo	Fir	5330	156	75
*Schacht.	.....	Buda HU	4¼x5½	28.9	L	G	Own	PT	F	Sheb	G	Dup	Own	C	Bos	.....	Own	A	3	M-E	Nat	W	Own	Flot	.....	.....	Own	36x4	36x4†	StM	.....	6000	156	70
*Schwartz CWS	3200	Buda HTU	4¼x5½	28.9	L	C	Fed	H	FS	Strm	G	Mon	M-E	DP	Bos	.....	Dun	U	3	M-E	Row	W	Shel	.....	9	36.5	Ros	36x4	36x8	Sch	Fir	5400	132	....
*Schwartz CW.	3200	Buda HTU	4¼x5½	28.9	L	C	Fed	H	FS	Strm	G	Mon	M-E	DP	Bos	.....	Dun	U	3	M-E	Row	W	Shel	.....	9	36.5	Ros	36x4	36x8	Sch	Fir	5400	150	....
*Schwartz CWL.	3300	Buda HTU	4¼x5½	28.9	L	C	Fed	H	FS	Strm	G	Mon	M-E	DP	Bos	.....	Dun	U	3	M-E	Row	W	Shel	.....	9	36.5	Ros	36x4	36x8	Sch	Fir	5400	168	....
Selden 2½A.	3550	Cont C4	4⅛x5¼	27.2	L	C	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	.....	B-Li	A	4	Spic	Per	W	Timk	Flot	8.5	37.5	Gem	36x4	36x7	Stn	.....	5400	145	74½
Service 51.	3475	Buda HU	4¼x5½	28.9	L	C	.....	Fin	F	Strm	G	Sim	B.B.	DP	Eis	.....	.....	A	4	Spic	.....	W	Timk	.....	7.75	37.5	Ros	36x4	36x7	Bim	.....	5180	160	70
Signal J.	3275	Cont C4	4⅛x5¼	27.2	L	C	.....	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	9.25	37	Ros	34x4	36x8	Hay	.....	5240	150	73
*Standard 76.	.....	Cont C2	4⅛x5¼	27.2	L	C	Lng	Fin	S	Strm	G	Mon	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Per	W	Timk	Flot	8.5	34	Ros	36x4	36x7	.....	.....	4430	140	71
*Sterling 2½.	.....	Ster CU	4⅜x5¾	30.6	L	C	Own	C	F	Rayf	V	Wau	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Math	W	Timk	½Fl	7.7	37.26	Ros	36x4	36x4†	Pru	.....	5500	156	88
*Stewart 7X.	2575	Buda HTU	4¼x5½	29.	...	G	Bus	PT	FF	Zen	G	Pier	Full	DP	Eis	.....	Full	U	4	Hart	Det	I	Cl	D	9.	43.2	Ross	34x4	34x7	CL	Fir	.....	156	72
Stoughton F.	3600	Her MU2	4¼x5½	28.9	L	C	Own	Fin	F	Strm	G	Dup	B-Li	DD	Eis	.....	B-Li	U	4	Ther	Shel	W	Shel	½Fl	8.75	35	Lav	36x5	36x5†	Bim	Gdy	5900	156	70
Success B	2850	Cont C4	4⅛x5¼	27.2	L	G	.....	H	F	Zen	...	Mon	Full	D	Eis	.....	Full	...	4	UP	Shel	W	Shel	.....	8.7	..	Lav	34x4	36x7	.....	.....	4700	144	80
Super Truck 50.	3300	Wis	4 x6	25.6	L	C	.....	Fin	F	Zen	G	Sim	Full	.....	Bos	.....	Full	U	4	Ther	Shel	W	Shel	½Fl	8.75	42	Lav	36x4	36x8	Bim	.....	5200	156	....
*Tiffin MW.	3580	Cont C4	4⅛x5¼	27.2	L	C	Own	Fin	FS	Sheb	G	Pier	Full	DD	Bos	W	Full	U	3	Pet	Kal	W	Shel	.....	8.7	41.7	Ros	36x4	36x4½†	Smi	.....	4890	148	80
Titan. 2½.	3400	Buda HTU	4¼x5½	28.9	L	C	BW	ZZT	F	Strm	G	Sim	B.B.	DP	Eis	.....	Cott	U	4	Pet	Shel	I	Cl	D	8	42	Woh	34x4	36x4†	Bim	.....	5300	156	70
Tower H2½.	3475	Cont C4	4⅛x5¼	27.2	L	C	Own	PT	S	Strm	G	Pier	Full	DP	Eis	.....	Full	U	3	Spic	Det	W	Timk	Flot	9.2	37	Ros	36x4	36x7	Pru	Gdy	5230	146	70
*Transport 50.	2785	Buda	4½x5½	28.9	L	G	Mod	C	F	Strm	G	Dup	Full	DD	Eis	.....	Full	U	4	Hart	Det	I	Cl	D	8.15	39	Jac	36x4	36x7	.....	Fir	4250	150	70
Traylor D.	3375	Buda HTU	4¼x5½	28.9	L	C	GO	Fin	F	Zen	...	Pier	Covt	DD	Spl	.....	Covt	...	4	Hart	Mer	W	Shel	½Fl	7.7	.....	Ros	36x4	36x7	Sch	.....	5500	151	78
Triangle B	2950	Wau FU	4x 5¾	25.6	L	C	Per	ZZT	FS	Strm	G	Wau	Full	DD	Eis	.....	Full	U	4	UP	Det	I	Cl	.....	8.1	39	Gem	36x4	36x7	Roy	Fir	4900	150	60
*Ultimate B.	3750	Buda HTU	4¼x5½	28.9	L	C	Own	Fin	F	Strm	G	Pier	B-Li	DD	Eis	W	B-Li	U	4	Spic	Shel	W	Shel	.....	7.75	.....	Ros	36x4	36x4†	Jon	Fir	5340	154	72
Union F.	3150	Wis TAU	4 x6	25.6	L	G	GO	Fin	F	Sheb	G	Dup	Full	DD	Eis	.....	Full	U	4	UP	Math	I	Russ	D	7.8	37.4	Ros	36x5	36x8	Pru	.....	5500	155	70
*United B2½.	3150	Buda HTU	4¼x5½	28.9	L	C	Mod	.....	F	Strm	G	Sim	Full	DD	Eis	Op	Full	A	4	Bld	Bea	I	Cl	D	8.15	39.12	Jac	36x4	36x7	Pru	.....	4940	151	70
Walker-Johnson B.	.....	Buda HTU	4¼x5½	28.9	L	G	Bus	PT	F	Zen	G	Pier	Opt	D	Eis	.....	Opt	A	4	Spic	Per	W	Timk	Flot	.....	.....	Ros	36x4	36x8	Arc	.....	5000	150	70
Ward LaFrance 2B.	3590	Own	4⅜x5¾	30.6	L	C	Own	Fin	F	Zen	G	.....	B-Li	DP	Bos	.....	B-Li	A	4	M-E	Mer	W	Timk	.....	6.8	36.38	Ros	36x4	36x4†	Hoo	.....	5400	158	85
White Hickory K.	.....	Cont C2	4⅛x5¼	27.2	L	C	Chi	Fin	FS	Strm	V	Sim	Full	DD	Eis	.....	Full	U	4	M-E	Shel	W	Timk	.....	8.5	40.8	Lav	36x4	36x7	Bim	Fir	4650	150	78
Wichita R.	3000	Wau BX	3¾x5¼	22.5	L	G	Per	C	F	Strm	G	Wau	Own	C	.....	.....	.....	A	4	Own	Det	W	Shel	½Fl	10.3	55.45	Ros	36x4	36x7	Smi	Fir	4500	144	80
Wilcox C.	.....	Own	4¼x5	28.9	L	G	.....	PT	S	Strm	G	Dup	Own	C	Bos	.....	Own	A	4	Own	Shel	W	Wis	½Fl	8.6	42.35	Own	36x4	36x3½†	.....	.....	5000	135	75
Wilson EA	3300	Own	4 x5⅛	25.6	H	C	.....	.....	FS	Mar	G	Pier	B.B.	.....	Eis	.....	Own	A	4	Ther	Per	W	Timk	.....	7.7	31	Ros	36x4	36x7	.....	.....	4625	152	80

3 Ton

*Ace 3-Ton.	3650	Buda HU	4¼x5½	28.9	L	C	Mod	.....	F	Sch	G	Pier	Full	DP	Eis	.....	Full	A	4	M-E	Math	W	Shel	F	9.1	34.1	Ros	34x6	36x8	Day	.....	5886	156	65
Beck-Hawkeye D.	3700	Cont G	4½x5½	32.4	L	G	.....	H	F	Strm	G	Pier	Full	DD	Bos	.....	Full	U	3	Bld	Hig	I	Cl	D	9	.....	Lav	36x5	36x8†	Smi	Fir	6000	160	70
*Bethehem H.	3095	Own H	4 x5¼	25.6	L	T	Liv	C	F	Zen	G	Pier	Full	DD	Bos	GD	Full	U	4	UP	Math	I	Russ	Flot	9.4	45	Lav	36x4	36x8	Smi	.....	5000	143	....
Denby 25.	3600	Cont C2	4⅛x5¼	27.2	L	C	Lng	PT	FS	Strm	G	Mon	Full	DD	Eis	.....	Full	U	4	UP	Det	I	Russ	D	9.4	45.3	Ros	36x4	36x7	Smi	.....	4920	150	79
Douglas I 3.	3500	Buda HTU	4¼x5½	28.9	L	C	Own	PT	F	Sheb	V	Pier	Full	DP	Eis	.....	Full	U	4	Arv	Own	W	Wis	.....	9.1	41	Ros	36x5	36x8	Own	Fir	4750	136	66¾
Forschler BX.	3450	Cont C2	4⅛x5¼	27.2	L	C	EM	.....	FS	Zen	...	Dup	Full	.....	Bos	.....	Full	...	4	Hart	Own	W	Shel	.....	.....	.....	Ros	36x4	36x8	Smi	.....	4725	137	....
F. W. D., B.	.....	Wis A	4¾x5½	36.1	T	C	McC	PT	F	Strm	G	Pier	M-E	DP	Eis	.....	Cott	A	3	Bld	Tut	B	Own	Flot	8.9	35.6	Ros	36x6	36x6	Sch	.....	6300	124	55
Gersix L.	4500	Buda YTU	4½x6	32.4	L	C	Idl	C	F	Strm	V	Mon	B.B.	.....	Bos	.....	Cott	A	4	Bld	Tut	W	Shel	.....	10.2	53.3	Ros	36x5	40x10	Jon	.....	6100	170	70
*Jumbo 30.	3950	Buda HU	4¼x5½	28.9	L	C	Own	Fin	F	Zen	V	Dup	Full	D	NE	.....	Full	U	4	Arv	Per	I	Cl	D	9	43.2	Jac	36x6*	42x9*	Cla	.....	5350	152	75
Kimball K.	4400	Wis VAU	4½x6	32.4	L	C	Flex	PT	F	Zen	V	Dup	B-Li	DP	Ber	W	B-Li	A	4	Spic	US	W	Shel	½Fl	7.7	37.31	Ros	36x4	36x8	Smi	Fir	5500	Op	66
*Packard ED.	4900	Own....	4½x5½	32.4	L	C	.....	Fin	F	Own	P	Own	Own	DP	Dix	Bj	Own	A	4	Spic	.....	W	Own	Flot	9.0	41.3	Own	36x5	36x5	Own	Own	7000	156	52.1
*Patriot Washington.	3450	Hink HA	4½x5½	32.4	L	G	Own	C	F	Strm	V	.....	Covt	DP	Spl	.....	Covt	A	4	Ther	Coop	W	Wis	½Fl	9.66	45.88	Ros	36x4	36x7	Bim	Gdy	5200	156	80
Rennoc M.	.....	Buda HTU	4⅛x5½	27.2	L	C	.....	.....	F	Strm	...	Pier	War	.....	Spl	.....	War	...	4	Hart	Row	W	Wis	.....	.....	.....	Lav	36x5	36x7	.....	.....	5050	144	65
Riker B.	4600	Own	4¼x6	28.9	T	C	.....	Fin	FS	B&B	G	Own	.....	C	Ber	W	.....	A	4	Own	.....	W	Own	.....	10	42.5	Ros	36x5	36x5†	.....	.....	6900	150	75
Rowe GPW.	5250	H-Sp8 VA	3¾x5	45	L	C	Fed	H	F	Zen	V	.....	B-Li	DP	AtK	W	B-Li	U	4	Spic	Shel	W	Shel	½Fl	7.7	31	Ros	38x7*	42x9*	Hos	.....	5500	170	71.8
Rowe GSW.	4150	Wis TAU	4 x6	25.6	L	C	Fed	H	F	Zen	G	Sim	B-Li	DP	Bos	.....	B-Li	U	4	Spic	Shel	W	Spel	½Fl	7.7	31	Ros	36x5	36x5†	Hos	.....	4800	162	68.5
Ultimate BL.	.....	Buda HTU	4¼x5½	28.9	L	C	Own	Fin	F	Strm	G	Pier	B-Li	DD	Eis	W	B-Li	U	4	Spic	Shel	W	Shel	.....	7.75	.....	Ros	36x4	36x4†	Jon	Fir	5590	178	72
U. S., R.	.....	Own	4 x5¼	25.6	...	C	Lng	Fin	F	Strm	V	Own	B-Li	DD	Eis	Op	B-Li	A	4	Opt	Shel	W	Shel	½Fl	8.7	41.5	Lav	36x4	36x4†	Sch	.....	5500	156	85
Vim 23.	3950	Her MU2	4¼x5½	28.9	L	C	McC	Fin	F	Zen	G	Dup	B-Li	D	Dix	.....	B-Li	A	4	Spic	Shel	W	Shel	.....	7.7	.....	Gem	36x5	36x5†	Smi	.....	6370	175	....
White 40.	4500	Own	3¾x5¾	22.5	L	C	.....	Fin	F	Own	V	Own	Own	D	.....	.....	.....	U	4	Own	.....	R	Own	Flot	.....	.....	Own	36x5	40x5†	.....	.....	7075	174	....
*Wichita RX.	3600	Beav JB	4¼x6	28.9	H	C	EM	C	F	Strm	G	Dup	.....	C	Ber	.....	.....	A	4	Own	Det	W	Shel	½Fl	8.7	45.5	Ros	36x4	36x8	Smi	Fir	5900	160	80

3½ Ton

*Acason L.	.....	Wau CU	4⅜x5¾	30.6	L	G	Can	C	FS	Sheb	V	Wau	Det	.....	Eis	.....	Cott	A	4	Bld	Det	W	Timk	.....	8.7	48.5	Ros	36x5	36x5†	Smi	Opt	6400	180	....
*Acme C.	4050	Cont E7	4½x5½	32.4	L	C	GO	Fin	FS	Rayf	V	Dup	B.B.	DP	Eis	.....	Cott	A	4	Bld	Det	W	Timk	Flot	10.3	53.73	Ros	36x5	40x10†	Bim	.....	7082	168	56
Aetna 135.	4375	Wis BAU	4½x6	32.4	L	G	GO	PT	F	Zen	G	Pier	B.B.	P	Bos	.....	Cott	A	4	Spic	Shel	W	Shel	½Fl	8.75	42.33	Ros	36x5	36x5†	.....	.....	6800	172	75
All-Power C.	5800	T-C	4½x6	32.4	H	...	.....	PT	...	Zen	V	.....	B.B.	.....	NE	NE	Cott	U	3	A-B	.....	W	Timk	.....	9.25	92.5	Ros	36x6	36x10	.....	.....	.....	150	....
Armleder KW.	.....	Buda YTU	4½x6	32.4	L	P	Lng	Fin	F	Zen	G	.....	Full	DD	Bos	.....	Full	U	4	Spic	Math	W	Timk	Flot	10.33	50	Ros	36x5	36x5†	StM	.....	6800	186	80
Atco C.	.....	Buda YTU	4½x6	32.4	L	C	Chic	PT	F	Strm	G	Pier	Full	D	Eis	.....	Full	A	4	Hart	GC	W	Wis	.....	10	.....	Ros	36x5	40x10	Smi	.....	6300	168	....
*Atterbury 7D-LWB.	4475	Cont E4	4½x5½	32.4	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U	4	Spic	SP	W	Timk	Flot	10.3	41.3	Gem	36x5	40x5†	Arc	Fir	6720	192	76
*Atterbury 7D-Standard.	4375	Cont E4	4½x5½	32.4	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U	4	Spic	SP	W	Timk	Flot	10.3	41.3	Gem	36x5	40x5†	Arc	Fir	6950	167	76
Available H3½.	4475	Own	4½x5½	32.4	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	B-Li	A	4	Spic	.....	W	Timk	Flot	10	41.33	Ros	36x5	40x10†	Sch	.....	6500	176	90
Brockway R2.	4100	ContE4	4½x5½	32.4	L	C	Bus	PT	FS	Strm	G	Opt	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Mer	W	Timk	.....	10.3	41.4	Gem	36x5	36x5†	Smi	.....	6800	164	70
Capitol M-3½.	4150	Wis UAU	4¼x6	28.9	L	C	GO	Fin	F	Strm	G	Sim	Det	DD	Bos	.....	Cott	U	4	Ther	SP	W	Wis	½Fl	9	46.8	Ros	36x5	36x10	.....	.....	6400	168	85
*Chicago C3½.	3800	Her MU3	4½x5½	32.4	L	C	.....	PT	F	Strm	G	Sim	B-Li	D	Bos	.....	B-Li	A	4	Pet	Math	W	Timk	Flot	10.33	50	Gem	36x5	36x10	Opt	Sta	6900	168	....
*Clydesdale 90C	4400	Own MU3	4½x5½	32.4	L	C	Own	PT	F	Strm	V	Own	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Stan	W	Timk	Flot	10.33	55.2	Ros	36x5	40x10	Smi	.....	6930	170	78
*Corbitt A.	4500	Cont E4	4½x5½	32.4	L	G	McC	Fin	FS	Strm	V	Pier	B-Li	DD	Eis	.....	B-Li	U	4	Hart	Shel	W	Shel	½Fl	11.75	47	Ros	36x5	36x10	Smi	.....	7370	178	75
Couple Gear HC	6100	Wis	5.1x5½	41.9	T	C	Idl	H	F	Strm	G	.....	.....	.....	Eis	.....	Own	...	..	Own	Tut	B	Own	.....	.....	.....	Own	36x4†	36x4†	Own	Own	9000	144	57
Dart W.	4000	Buda YTU	4½x6	32.4	L	C	Own	C	F	Zen	G	Pier	Full	DD	Eis	.....	Full	A	4	Spic	Per	W	Own	.....	8.7	52.5	Ros	36x5	36x10	Pru	.....	6740	160	75
*Day Elder F.	3750	Cont E4	4½x5½	32.4	L	C	Bus	Fin	FS	Zen	G	Mon	B-Li	D	Eis	.....	B-Li	U	4	Hart	IC	W	Shel	½Fl	10.25	41	Gem	36x5	36x5†	Jon	Fir	5750	165	70
*Diamond T, K.	3925	Hin	4¼x5½	28.9	L	C	GO	Fin	FS	Strm	V	.....	Covt	DD	Bos	.....	Covt	A	4	Spic	Math	W	Timk	Flot	8.7	42.35	Gem	36x5	36x5†	.....	.....	7250	170	....
Doane 3½.	.....	Wau C	4⅜x5¾	30.6	L	C	.....	C	F	Mas	G	Wau	.....	DD	Bos	.....	.....	U	3	.....	.....	C	Own	D	9.5	.....	Lav	36x5	36x5†	.....	.....	7000	169	79
Dorris K7.	4400	Own	4¼x5½	28.9	H	C	McC	Fin	F	Strm	G	Own	Own	DP	Bos	.....	War	A	4	Spic	Row	W	Timk	Flot	10.33	51.5	Ros	36x5	36x10	Smi	.....	6750	194	70
Duplex E.	4250	Buda TU	4¼x5½	28.9	H	C	.....	ZZT	FS	Sheb	G	Pier	B.B.	DD	Eis	.....	B-Li	U	4	Pet	Tut	I	Own	D	8	32	Woh	36x8	36x8	Pru	.....	6050	130	60
Erie 3½.	.....	Buda HTU	4¼x5½	28.9	L	C	McC	.....	FS	Strm	V	Wau	B.B.	DP	Bos	.....	Full	A	4	Spic	Per	W	Shel	.....	.....	.....	Ros	36x5	40x5†	Hoo	Fir	7200	168	80
*Fageol 4500.	5000	Wau DU	4½x6¼	32.4	L	C	Mod	C	F	Zen	V	Wau	B-Li	DD	Dix	.....	Own	A	5	Spic	Math	W	Timk	Flot	7.4	79	Ros	36x5	36x5†	Stn	.....	7300	172	80
*Federal WE.	3950	Cont E4	4½x5½	32.4	L	C	Own	Fin	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Math	W	Timk	.....	10.33	51.56	Gem	36x5	36x5†	Smi	Fir	7000	156	74.5
Garford 77D.	.....	Buda YTU	4½x6	32.4	L	C	Own	Fin	F	Strm	G	Sim	B-Li	DD	Spl	.....	.....	A	4	Spic	Per	W	Timk	.....	8.7	.....	Ros	36x5	36x5†	Smi	.....	7550	162	....
*Gary KT.	4050	Buda YTU	4½x6	32.4	L	C	Chic	Fin	F	Mas	G	McC	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	10.33	41.32	Ros	36x5	40x5†	Pru	.....	7000	162	....
G. M. C. 71A.	.....	Cont E4	4½x5½	32.4	L	C	McC	PT	F	Mar	G	Mon	Own	DP	Eis	.....	Own	A	4	Own	.....	W	Timk	Flot	12	58.6	Jac	36x5	40x5†	Own	.....	7540	163	75
G. M. C. 71B.	.....	Cont E4	4½x5½	32.4	L	C	McC	PT	F	Mar	G	Mon	Own	DP	Eis	.....	Own	A	4	Own	.....	W	Timk	Flot	12	58.6	Jac	36x5	40x5†	Own	.....	7655	187	75

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels
3½ Ton—Con'd		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			21			22	23			
*Gramm-Bernstein 35	4375	Hink	4½x5½	32.4	L	C	Own	Fin	F	Strm	V	Hink	Own	DD	Eis	NE	Own	A	4	Own	Per	W	Stan	½Fl	8.7	50.6	Ros	36x5	40x5†	Smi	Fir	8350	156	91.7
Hahn F		Cont E4	4½x5½	32.4	L	C	Own	PT	F	Strm		Pier		DD	Bos		B-Li	A	4	Spic		W	Timk		10		Ros	36x5	36x5†			6600	Op	65
Hal-Fur B	3250	Hin HA-500	4¼x5½	28.9	L	G	GO	PT	F	Strm	V	Hin	B.B.	P	Bos	W	B-Li	A	4	Pet	Per	W	Timk	Flot	6.8	37.5	Gem	35x5*	Opt		Fir	5000	Gp	70
Hall 3½	4100	Cont E4	4½x5½	32.4	L	T	Own	PT	FS	Zen	G	Dup	B-Li	DP	Bos		B-Li	A		Spic	Shel	W	Timk		10		Ros	36x5	36x5†	Smi		6825	Op	
Harvey WHA	4300	Buda YU	4½x6	32.4	L	G		Fin	FS	Strm	G	Mon	B.B.		Eis		B-Li	A	4	Spic	Shel	W	Shel		8.7	42.35	Ros	36x5	36x5†	Smi		7700	160	80
*Hendrickson J	3975	Buda HTU	4¼x5½	28.9	L	C			F	Strm	G	McC		D	Dix		Full	A	4	Ther	Tut	W	Timk		10	49.6	Ros	36x5	36x5	Stn			Op	80
Hewitt-Ludlow		Buda	4½x5½	32.4						Strm			B.B.		Bos		Cott		4	Spic		W	Wis				Ros	36x5	36x5			6300	156	
Hurlburt	4590	Buda YTU	4½x6	32.4	L	C	Own		FS	Flch	G	Dup	B-Li	D	Eis		B-Li	A	4	Spic	Per	W	Own	Flot	8.7	41.91	Ros	36x5	36x5	Wan		6400	156	
*Indiana 35	3750	Own 40	4¾x5½	30.6	L	C	McC	Fin	F	Strm	G	Pier	B.B.	DD	Eis		B-Li	A	4	Spic	Shel	W	Shel	½Fl	10.2	49.6	Woh	36x5	36x5†	Smi		7050	160	75
International L	4500	Own L	4¼x5	28.9	H	T	Own	Fin	FS	Ens	G	Own	Own	DP	Dix	Own	Own	A	4	Own		I	Own	D	11	53.25	Own	36x5	40x10	Own		7500	160	50
Jackson B	4250	Cont E4	4½x5½	32.4	L	T		Fin	FS	Strm		Pier	B.B.	DP	Eis	Dyu	Own			Spic	Per	B	Own	Flot	9.2	43.49	Ros	36x7	36x7			7400	150	65
*Jumbo 35	4550	Buda YTU	4½x6	32.4	L	C	Own	Fin	F	Zen	G	Sim	B-Li	D	Eis		B-Li	U	4	Spic	Per	I	Cl	D	9	48.15	Jac	36x5	36x10	Day		7510	165	75
*Kalamazoo K	4300	Wis UAU	4¼x6	28.9	L	C	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Full	A	4	Acm	Shel	W	Shel	½Fl	10.25	49.8	Ros	36x5	36x5†	Smi		7500	160	80
Kelly-Springfield K40	4400	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	Own	C	Eis	W	Covt	A	3	Own	Per	C	Own	D	10.4	31.6	Gem	36x5	40x5†	StM		7730	150	93
*Kelly-Springfield K-41	4650	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	W	Covt	A	4	Pet	Per	I	Cl	D	10	50.7	Gem	36x5	40x5†			7900	156	90
Kelly-Springfield K-42	4650	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	W	Covt	A	4	Pet	Per	W	S-Par	½Fl	10.25	52	Gem	36x5	40x5†	StM		8500	156	90
Kleiber C	4900	Cont E4	4½x5½	32.4	L	C	RT	PT		Strm	G			WD	Bos		B-Li	A	4	Spic		W	Timk	Flot	8.75	42.35	Ros	36x5	36x10	W-L		7200	163	75
Larrabee-Deyo L	4200	Cont E4	4½x5½	32.4	L	C	Bus	Fin	S	Sheb	G	Sim	B-Li	DD	Bos		B-Li	A	4	Opt	Mer	W	Shel	½Fl	10	41	Ros	36x5	36x5†	Hoo		6850	186	
Maccar M2	4500	Wis VAU	4½x6	32.4	L	C	Own	Fin	FS	Strm	G	Pier	B-Li	DD	Eis		B-Li	U	4	Spic	Mer	W	Timk	Flot	8.75	42.35	Ros	36x5	36x5†	Day	Fir	6175	172	70
Mack AC	4950	Own AC	5 x6	40	L	C	Own	PT	S	Zen	G	Own	Own	DP	Aer		Own	UJ	3	Spic	Mer	C	Own	D	8.49	27	Own	36x5	40x5†	Sch		8070	Op	65
*Master A	4190	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis		B-Li	A	4	Spic	Det	W	Timk	Flot	10	41.32	Ros	36x5	40x5†	Smi		7000	158	
*Master AL	4290	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis		B-Li	A	4	Spic	Det	W	Timk	Flot	10	41.32	Ros	36x5	40x5†	Smi		7200	194	
*Master E	4640	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis		B-Li	A	4	Spic	Det	R	Walk	Flot	11.5	46	Ros	36x5	40x5†	Wal		7000	158	72
*Master EL	4740	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis		B-Li	A	4	Spic	Det	R	Walk	Flot	11.5	46	Ros	36x5	40x5†	Wal		7200	194	72
Menominee G	4270	Wis VAU	4½x6	32.4	L	C		Fin	FS	Strm	G	Mon	Det	DP	Eis		Cott	A	4	Spic	Tut	W	Timk		10.3	56.16	Ros	36x5	36x5†	Stn	Fir		160	80
Nelson & LeMoon F3½		Cont E4	4¼x6½	28.9	T	C	Chic	Fin	S	Strm	G	Mon	B-Li	DD	Bos	W	B-Li	U	4	Own	Tut	W	Timk		8.7	42	Lav	36x5	36x5†	Pru	Gdy	6000	Op	80
Noble E70		Buda YTU	4½x6	32.4	L	C	Chic	Fin	F	Strm	G	Pier	Full	DP	Eis	W	War	A	4	M-E	Tut	W	Shel	½Fl	8.7	42	Lav	36x5	36x10	Bim	Fir	6500	182	85
Northway B3		Own	4 x6	25.6	H	C	GO	C	F	Strm	V	Pier	Full	DP	Wag	W	Full	U	4	Spic	Per	W	Shel	½Fl	10	49.2	Ros	36x5	40x5†	Cla		7260	Op	72
O.K. 3½ T	4250	Buda YTU	4½x6	28.9	L	G	RT	PT	FS	Zen	V	Pier	Full	DD	Eis		Full	A	4	Hart	Cham	W	Wis		10		Ros	36x5	36x5†	Bim			164	
Old Reliable C	4500	Wis UAU	4¼x6	28.9		C	Chic	PT	FS	Strm	V	Mon	Full	DD	Bos		Full	A	4	Spic	Shel	W	Shel	½Fl	8.7	42.5	Ros	34x5	36x5†	StM		6650	160	75
*Oneida D9	4350	Oneida	4½x5½	32.4	L	C	Own	C		Strm		Own	Own	DP			Own	A	4	Own	Math	W	Own	½Fl	10.33	48		36x5	36x10			7250	170	
Orleans C	4400	Hev	4½x6	32.4	L	C	Chic	PT	F	Opt		Dup	Det	D	Opt	Opt	Cott		4	Bld		W	Wis		10.33		Ros	36x5	36x5†			6125	172	80
*Paige 51-18	4285	Hin HA 200	4½x5½	32.4	L	C	Own	Fin	F	Strm	V	Sim	B-Li	DD	Bos	Opt	B-Li	A	4	Spic	Per	W	Timk	Flot	10.3	50.01	Jac	36x5	36x5†	Own	Fir	7000	160	85
Parker J20		Wis VAU	4½x6	32.4	L	C	Own	PT	F	Strm	G	Mon	B-Li	DD	Bos	W	War	A	4	Bld		W	Own	Flot	8.75	43.6	Ros	38x7*	44x10*	Smi		6200	160	76
*Pierce Arrow W2	4950	Own	4½x6¾	32.4	T	C			F	Strm	F	Own		DD	Del			A	4			W			8.1	49		36x5†	36x5	Day		8350	162	85
*Powers C		Hink HA	4½x5½	32.4	L	G	GO	PT	F	Zen		Hin	Det	D	Eis	Bj	Cott	R	4	UM	Row	W	Wis	½Fl	10		Ros	36x5	40x10	StM		6420	167	66⅔
*Republic 20	3845	Cont E4	4½x5½	32.4	L	C	Own	Fin	FS	Strm	G	Phar	Full	DD	Bos		Full	U	4	Hart	Math	I	Torb	D	10.3	48	Jac	36x5	36x10	Smi	Fir	6250	165	
Reynolds 7A		Hink HA 1600	4½x5½	32.4	H	C	Lng	Fin	F	Strm	G	Hin	Covt	DD	Bos	W	Covt	A	4	Sned	Per	W	Shel		8.7	44.36	Lav	36x5	36x5†	Smi			176	80
*Sandow M	4095	Cont E4	4½x5½	32.4	L	G		Fin	FS	Strm	G	Mon		DD	Bos		B-Li	A	4	Spic	GC	W	Timk		10	42	Ros	36x5	36x5†	Pru		6500	175	70
Sanford W35	4200	Cont E4	4½x5½	32.4	L	G	McC	Fin	F	Strm	G	Pier	B.B	DP	Eis		B-Li	A	4	Spic	Per	W	Sheb	½Fl	8.7	34.8	Ros	36x5	36x5†	Hoo	Fir	6750	174	75
*Schacht		Buda XTU	4¼x6	28.9	L	G	Own	PT	F	Sheb	G	Dup	Own	C	Bos		Own	A	4	M&E	Nat	W	Own	Flot			Own	36x5	36x5†	StM		6500	168	70
*Selden 3½A	4325	Cont E7	4½x5½	32.4	L	C	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis		B-Li	A	4	Spic	Per	W	Timk	Flot	8.7	42	Gem	36x5	36x10	Stn		7200	162	76
Service 71	4285	Buda HU	4¼x5½	28.9	L	C		Fin	F	Strm	G	Sim	B.B.	DP	Eis			A	4	Spic		W	Timk		8.75	42.35	Ros	36x5	36x5†			6930	171	70
Service 76	4485	Buda YU	4½x6	32.4	L	C		Fin	F	Strm	G	Sim	B.B.	DP	Eis			A	4	Spic	Bea	W	Timk		7.8	37.75	Ros	36x5	36x5†			7280	171	70
Signal M	4275	Cont E4	4½x5½	32.4	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DD	Eis		B-Li	A	4	Spic	Det	W	Timk	Flot	12	58.08	Ros	36x5	40x10	Hay		7780	168	78
*Standard 66		Cont E7	4½x5½	32.4	L	C	Lng	Fin	S	Strm	V	Mon	B-Li	DD	Eis		B-Li	A	4	Spic	Per	W	Timk	Flot	10.3	50	Gem	36x5	36x5†			6480	160	70
Sterling 3½		Ster DU	4½x6¼	32.4	L	C	Own	C	F	Rayf	V	Wau	M-E	WD	Eis		Own	A	3	Spic	Math	W	Timk	Flot	8.75	39.5	Ros	36x5	40x5†	Pru		8300	162	92
*Stewart 10	3395	Cont E7	4½x5½	32.4	L	G	Bus	PT	FS	Zen	G	Pier	Full	DP	Eis		Full	U	4	Hart	Det	I	Cl	D	10	48	Ros	36x5	36x5†	Cla	Fir	6080	165	80
*Stewart 10X	3495	Buda YTU	4½x6	32		G	Bus	T	FF	Zen	G	Pier	Full	DP	Eis		Full	U	4	Hart	Det	I	Cl	D	10	48.01	Ross	36x5	36x5	Cla	Fir		165	80
Super Truck 70	4300	Wis	4¼x6	28.9	L	C		Fin	F	Zen	G	Sim	Full		Bos		Full	A	4	Spic	Shel	W	Shel	½Fl	10.25	49.2	Ros	36x5	40x5	Smi		7300	164	
*Tiffin PW	4760	Cont E4	4½x5½	32.4	L	C	Own	Fin	S	Sheb	G	Pier	B.B.	DP	Bos	W	Full	A	4	Pet	Kal	W	Shel		8.7	41.7	Ros	36x5	36x5†	Smi		6850	160	80
Titan 3½	4550	Buda YTU	4½x6	32.4	L	C	B&W	ZZT	F	Strm	G	Sim	B.B.	DP	Eis		Cott	A	4	UP	Math	I	Cl	D	9	48	Lav	36x5	40x5†	Day		7300	156	70
Tower G3½	4400	Cont E4	4½x5½	32.4	L	C	Own	PT	S	Zen	G	Pier	Full	DP	Eis		Full	U	4	Spic	Det	W	Timk	Flot	10.33	50	Ros	36x5	36x5†	Pru	Gdy	7010	165	70
*Transport 70	4195	Buda	4½x6	32.5	L	G	Mod	C	F	Strm	G	Dup	B.B.	D	Eis		Cott	U	4	Hart	Det	I	Cl	D	10.1	52	Jac	36x5	36x10		Fir	7150	170	80
*Twin City 3½		Own	4¼x6	28.9	H	C	Mod	H	F	Holl	V	Own	B.B.	D	Bos		Full	A	4	Spic	Math	W	Timk		10.33	49.58	Ros	36x5	40x5†	Smi		6800	168	80
Twin City 4 Wheel D. B.	4750	Wis JA	5½x6	42	T	C		C	FS	Strm	G	Pier	M-E	WD	KW		Cott	A	3			I		½Fl			Ros	36x5	36x6	Arc		7200	146	60
*United C 3½	3975	Buda HTU	4¼x5½	28.9	L		Mod		F	Holl	G	Sim	Full	DD	Eis	Opt	Full	A	4	Bld	Bea	I	Cl	D	10	48.1	Lav	36x5	36x5†	Cla		6700	157	70
Ward LaFrance 4A	4690	Own	4½x6¼	32.4	L	C	Own	Fin	F	Zen	G		B-Li	DP	Bos		B-Li	A	4	M&E	Mer	W	Timk		7.8	37.75	Ros	36x5	36x5†	Smi		7750	162	85
Watson N		Cont E4	4½x5½	32.4	L	P	R-T	PT	FS	Strm	G	Pier	B-Li	D	Sim		B-Li	A	4	Spic	Shel	W	Wis		9		Gem	36x5	36x10			6600	168	75
Wichita O	4000	Beav JB	4¼x6	28.9	H	G	EM	C	F	Strm	G	Dup		C	Ber			A	4	Own	Det	W	Shel	½Fl	11.75	61.10	Ros	36x5	36x5†	Smi		6500	165	80
Wilcox E		Buda	4½x6	32.4	L	C		PT	S	Strm	G	Dup	Own	C	Bos		Own	A	4	Own	Shel	W	Wis	½Fl	10	45.1	Own	36x5	36x5†			6600	147	75
Wilson G	4300	Own	4¼x5½	28.9	L	C		Fin	FS	Mar	V	Pier	B.B.	DP	Eis		Own	A	4	K-B	Per	W	Timk		8.7	42.3	Ros	36x5	36x5†	Smi		6800	160	80
*Winther 70	4200	Wis TAU	4 x6	25.6	L	G	Brm	PT	F	Mas	V		B.B.	DP	Eis	W	B-Li	A	4	Bld	Math	I	Cl	D	9	36	Ros	36x5.	36x5†	Cla	Fir	6400	150	85
4 Ton																																		
American	4575	Wis	4½x6	32.4	L	G	GO	Fin	F	Strm	G	Pier	Det	DP	Eis		Covt	A	4	Acm	SP	W	Wis	½Fl	10		Lav	36x5	36x5†	Smi		6475	158	
Bessemer K2		Cont E7	4½x5½	32.4	L	C		C	FS	Strm	G	Pier	B.B.	DP	Bos		B-Li	A	4	Spic	Per	I	Torb	D	10	49.5	Ros	36x5	36x10†	Sch	Fir	6740	175	75
Bethehem J	3995	Own J	4½x5½	32.6	L	T	Liv	C	F	Zen	G	Pier	Full	DD	Bos	GD	Full	U	4	UP	Math	I	Torb	Flot	10.2	49	Lav	36x5	36x5†	Smi		6100	162	
*Bridgeport 4C	3850	Buda YTU	4½x6	32.4	L	G	Own		FS	Strm		Pier	B.B.		Eis					Hart		W	S-Par		10		Ros	36x5	36x10	Arc		9000	170	70
*Denby 27	4600	Cont E7	4½x5½	32.4	L	G	Lng	PT	FS	Strm	G	Sim	Full	DD	Eis		Full	A	4	Spic	Det	I	Cl	D	10	49.9	Ros	36x5	36x5†	Smi		7020	170	78
Double-Drive B	4000	Buda HTU	4¼x5½	28.9	L			PT	F	Zen	V	Pier	B.B.	DD	Lor	Opt	Own	A	4	Own	Own	W	Own	½Fl	9.75	48.75	Lav	36x6	36x6	Stn			130	55
Highway-Knight A		R & V-W	4 x6	25.6	S	T	Own	PT	F	Zen	V	Mon	Pet	DP	Eis	Wg	Own	A	4	Ther		W	Shel		8.7	42.3	Ros	36x5	36x6†	Sch		7400	159	90
*Jumbo 40	5200	Buda YTU	4½x6	32.4	L	C	Own	Fin	F	Zen	G	Sim	B-Li	D	Eis		B-Li	U	4	Spic	Per	I	Cl	D	10	53.5	Jac	38x7*	44x10	Cla		7800	165	75
Kelly-Springfield K45	4550	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	Own	C	Eis	W	Covt	A	3	Own	Per	C	Own	D	10.7	32.3	Gem	36x5	40x6†	StM		8125	150	93
Kimball E	5000	Wis RAU	4¾x6	36.1	L	C	Flex	PT	F	Zen	V	Dup	B-Li	DP	Ber	W	B-Li	A	4	Spic	US	W	Shel	½Fl	8.7	42.3	Ros	36x5	40x10	Smi	Fir	8100	Op	66
*King Zeitler		Cont E4	4½x5½	32.4	L	G		PT	FS	Strm	G	Pier	B-Li	DD	Bos		B-Li	A	4	Ther	Mer	W	Timk	Flot	10	49	Lav	36x5	40x5†	StM		6500	172	80

*Kissel Heavy Duty	4475	Own 14000	4¼x5½	28.9	L	C	McC	PT	S	Strm	V	Pier	War	DD	Eis	....	War	A	4	Spic	Shel	W	Shel	½Fl	11.7	58.6	Jac	36x5	36x5†	Smi	....	7200	168	75
Moreland 20G	4975	Cont B2	4¾x6	36.1	L	C	Own	Fin	F	Mas	G	Con	Own	DD	Dix	....	Own	A	4	Ther	US	W	Timk	....	7.8	37.7	Ros	36x5	40x5†	Smi	....	7810	162	....
Riker BB	4700	Own	4¼x6	28.9	T	C	....	Fin	FS	BB	G	Own	....	C	Ber	W	....	A		Own	....	W	Own	½Fl	10	42.5	Ros	36x5	36x6†	....	....	7200	150	77
Rowe HW	4500	Wis UAU	4¼x6	28.9	L	C	Fed	H	F	Zen	G	Sim	B-Li	DP	Bos	....	B-Li	U	4	Spic	Shel	W	Shel	....	8.7	35	Ros	36x5	36x6†	Hoo	....	6370	156	77
*Schwartz DWS	4900	Buda YTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	DP	Bos	....	Full	A	4	ME	Row	W	Shel	....	12	72	Ros	36x6	40x12	Smi	Fir	9000	156	....
*Schwartz DW	4900	Buda YTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	DP	Bos	....	Full	A	4	ME	Row	W	Shel	....	12	72	Ros	36x6	40x12	Smi	Fir	9000	170	....
*Schwartz DWL	4900	Buda YTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	DP	Bos	....	Full	A	4	ME	Row	W	Shel	....	12	72	Ros	36x6	40x12	Smi	Fir	9000	186	....
Union H	3975	Wis VAU	4½x6	32.4	L	G	GO	Fin	F	Sheb	G	Dup	Full	DD	Eis	....	Full	U	4	UP	Mat	I	Torb	D	10.25	49.2	Ros	36x6	36x10	Smi	....	6800	174	75
U. S., S	....	Own	4½x5½	32.4	...	C	Lng	Fin	F	Strm	V	Own	B-Li	DD	Eis	Opt	B-Li	A	4	Opt	Shel	W	Shel	½Fl	10.25	49.6	Lav	36x5	36x5†	Sch	....	7600	168	85
5 Ton																																		
Acason M	....	Wau EU	5 x6¼	40	L	G	Can	Fin	FS	Sheb	V	Wau	Det	....	Eis	....	Cott	A	4	Bld	Det	W	Timk	....	10.25	53.3	Ros	36x6	40x6†	Smi	Opt	8350	187	....
*Acme E	5150	Cont B2	4¾x6	36.1	L	C	GO	Fin	F	Rayf	V	Con	B.B.	DP	Eis	....	Cott	A	4	Bld	Det	W	Timk	Flot	11.66	60.66	Ros	36x6	40x12	Smi	....	9278	180	56
*Atterbury 8E	5975	Cont B2	4¾x6	36.1	L	C	Own	Fin	F	Zen	V	Con	B-Li	DD	Ber	....	B-Li	A	4	Spic	SP	W	Timk	Flot	11.6	56.1	Gem	36x5	40x6†	Stn	....	9496	167	81¾
*Available H5	5575	Own	4¾x6	36.1	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	....	B-Li	A	4	Spic	....	W	Timk	Flot	11.3	56.4	Ros	36x6	40x12	Smi	....	9500	190	90
Brockway T	5250	Cont B2	4¾x6	36.1	L	C	Bus	Fin	F	Strm	V	Con	B-Li	DD	Eis	....	B-Li	A	4	Spic	Mer	W	Timk	....	11.3	56.4	Gem	36x6	40x6†	Smi	....	8800	174	70
Chicago D5	4600	Her MU3	4½x5½	32.4	L	C	....	T	F	Strm	G	Sim	B-Li	D	Bos	....	B-Li	A	4	Pet	Math	W	Timk	Flot	13.66	63.1	Gem	36x6	40x12	Opt	Sta	6900	168	....
*Clydesdale 120 C	5500	Own T2	4¾x6	36.1	L	G	Own	PT	F	Strm	V	Own	B-Li	DD	Bos	....	B-Li	A	4	Spic	Stan	W	Timk	Flot	11.66	62.4	Ros	36x6	40x12	Smi	....	8990	176	76
Corbitt AA	5500	Cont B2	4¾x6	36.1	L	C	McC	Fin	F	Strm	V	Con	B-Li	DD	Eis	....	B-Li	A	4	Bld	Shel	W	Shel	½Fl	10.25	49.6	Ros	36x6	40x6†	Smi	....	9685	178	70
Couple Gear AC	6700	Wis	5¼x7	44.1	T	G	Idl	H	F	Strm	G	....	....	....	Eis	Own	Own	...	5	Own	Tut	B	Own	....	25	....	Own	36x5†	36x5†	Own	Own	11000	144	60
*Day-Elder E	4600	Buda YU	4½x6	32.4	L	C	Bus	Fin	F	Zen	G	Mon	B-Li	D	Eis	....	B-Li	A	4	Hart	Shel	W	Shel	½Fl	10.25	49.61	Gem	36x5	40x6†	Smi	Fir	8250	170	70
*Denby 210	5350	Cont E7	4½x5½	32.4	L	C	Lng	PT	FS	Strm	G	Sim	Full	DD	Eis	....	War	A	4	Spic	Det	I	Cl	D	12.5	62.7	Ros	36x6	40x6†	Cla	....	8590	170	80
*Diamond T-EL	4615	Hin	4½x5½	32.4	L	C	GO	Fin	FS	Strm	V	....	Covt	DD	Bos	....	Covt	A	4	Spic	Math	W	Timk	Flot	11.66	59.11	Gem	36x6	40x6†	....	....	8625	180	....
*Diamond TS	4800	Own	4¾x6	36.1	L	C	GO	Fin	FS	Strm	V	Pier	Covt	DD	Bos	....	Covt	A	4	Spic	Math	W	Timk	Flot	12.5	56.4	Gem	36x5	40x6†	....	....	8790	180	....
*Fageol 5300	5700	Wau DU	4½x6¼	32.4	L	C	Mod	C	F	Zen	V	Wau	B-Li	DD	Dix	....	Own	A	5	Spic	Math	W	Timk	Flot	8.4	89	Ros	36x6	40x6†	Stn	....	8300	172	80
*Federal XE	4600	Cont E4	4½x5½	32.4	L	C	Own	....	FS	Zen	G	Phar	B-Bi	DP	Eis	....	Own	A	4	Spic	Math	W	Timk	....	13.66	68.1	Gem	36x6	40x6†	Smi	Fir	8100	156	77.5
Garford 68	....	Wis AU	4¾x5½	36.1	T	C	Own	Fin	...	Rayf	G	Sim	B-Li	DD	Eis	....	....	A	4	Spic	Per	C	Own	D	11.44	....	Ros	36x6	40x6†	Smi	....	8870	128	....
*Gary M	5150	Buda BTU	5 x6½	40	L	C	Chic	Fin	F	Mas	G	McC	B-Li	DD	Eis	....	B-Li	A	4	Spic	Det	W	Timk	Flot	11.66	56.4	Ros	36x6	40x6†	Day	....	8500	182	....
*G. M. C. 101A	....	Cont E4	4½x5½	32.4	L	C	McC	PT	F	Mar	G	Mon	Own	DP	Eis	....	Own	A	4	Own	....	W	Timk	Flot	14	66.7	Jac	36x6	40x6†	Own	....	8485	163	75
*G. M. C. 101B	....	Cont E4	4½x5½	32.4	L	C	McC	PT	F	Mar	G	Mon	Own	DP	Eis	....	Own	A	4	Own	....	W	Timk	Flot	14	66.7	Jac	36x6	40x6†	Own	....	8655	187	75
*Gramm-Bernstein 50	5275	Lib B	4¾x6	36.1	L	C	Own	Fin	F	Strm	V	Con	Own	DD	Eis	NE	Own	A	4	Own	Per	W	Stan	½Fl	9.5	55	Ros	36x6	40x6†	Smi	....	9860	168	92.2
Hahn FE	....	Cont B2	4¾x6	36.1	L	C	Own	Fin	F	Strm	V	Con	....	DD	Bos	....	B-Li	A	4	Spic	....	W	Timk	....	10	....	Ros	36x6	40x6†	....	....	8400	Op	65
Hall	5100	Cont E4	4½x5½	32.4	L	T	Own	PT	FS	Zen	G	Dup	B-Li	DP	Bos	....	B-Li	A	..	Opt	Per	W	Timk	....	12	....	Gem	36x5	40x6†	Smi	....	8400	Op	....
Harvey WKA	5200	Buda YU	4½x6	32.4	L	G	....	ZZT	FS	Strm	G	Mon	B.B.	DP	Eis	....	B-Li	A	4	Spic	Shel	W	Shel	....	8.7	42.3	Ros	36x6	40x6†	Smi	....	8900	160	80
*Hendrickson K	4800	Wau EU	5 x6¼	40	L	C	....	....	F	Strm	G	Wau	....	D	Dix	....	Full	...	4	Ther	Tut	W	Timk	....	12	57	Ros	36x6	40x6†	Stn	....	....	Op	....
Hewitt Ludlow	....	Buda YU	4½x6	52.4	...	...	....	....	...	Strm	...	....	B.B.	....	Bos	....	Cott	...	4	Spic	....	C	....	....	....	....	Lav	36x6	40x6†	....	....	8000	168	....
Highway-Knight B5	....	R&V-W	4 x6	25.6	S	T	Own	PT	F	Zen	V	Mon	Own	DP	Eis	Wg	Own	A	4	Ther	....	W	Shel	....	10	49.14	Ros	36x5	40x6†	Sch	....	8650	159	90
Hurlburt	5500	Buda TU	4½x6	32.4	L	C	Own	....	FS	Flch	G	Dup	B-Li	D	Eis	....	B-Li	A	4	Spic	Per	W	Own	Flot	11	49.9	Ros	36x5	40x6†	Wau	....	7800	156	....
*Indiana 51	4775	Wau EU	5 x6¼	40	L	C	McC	Fin	S	Strm	G	Wau	B.B.	DD	Eis	....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	8.75	42.3	Woh	36x5	40x6†	Smi	....	9000	170	76.8
Kelly-Springfield K50	5150	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	Own	C	Eis	W	Covt	A	3	Own	Per	C	Own	D	12.24	44.6	Gem	36x6	40x6†	StM	....	8400	150	93
Kimball F	5975	Wis RBU	5 x6	40	L	C	Flex	PT	F	Zen	V	Dup	B-Li	DP	Spl	W	B-Li	A	4	Spic	US	W	Shel	½Fl	8.75	42.3	Ros	36x6	40x12	Smi	Fir	8400	Op	66
*Kissel Goliath	5085	Own 60000	4¼x5½	28.9	L	C	McC	PT	S	Strm	V	Pier	War	DP	Eis	....	War	A	4	Spic	Shel	W	Shel	½Fl	13	65	Jac	36x6	36x6†	Smi	....	7900	180	75
Kleiber D	5600	Cont T	5¼x5¾	44.1	T	C	RT	PT	...	Strm	G	Sim	....	WD	Bos	....	B-Li	A	4	Spic	....	W	Timk	Flot	11.66	56.48	Ros	36x6	40x6	Smi	....	9200	180	75
Larrabee-Deyo W	5100	Cont B2	4¾x6	36.1	L	C	Bus	Fin	F	Sheb	G	Sim	B-Li	DD	Bos	....	B-Li	A	4	Opt	Mer	W	Shel	½Fl	10	51	Ros	36x6	40x6†	Smi	....	9900	186	....
Mack AC	5500	Own AC	5 x6	40	L	C	Own	Fin	S	Zen	G	Own	Own	DP	Aer	....	Own	UJ	3	Spic	Mer	C	Own	D	9	28.8	Own	36x6	40x6†	Sch	....	8650	Op	68
Master B	5290	Buda ATU	4¾x6½	36.1	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	....	B-Li	A	4	Spic	Det	W	Timk	Flot	10	49.6	Ros	36x6	40x6†	Smi	....	8000	170	72
Master BL	5390	Buda ATU	4¾x6½	36.1	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	....	B-Li	A	4	Spic	Det	W	Timk	Flot	10	49.6	Ros	36x6	40x6†	Smi	....	8200	194	72
Master F	5440	Buda ATU	4¾x6½	36.1	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	....	B-Li	A	4	Spic	Det	R	Walk	Flot	11.5	55.6	Ros	36x6	40x6†	Wal	....	8000	170	72
Master FL	5540	Buda ATU	4¾x6½	36.1	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	....	B-Li	A	4	Spic	Det	R	Walk	Flot	11.5	55.6	Ros	36x6	40x6†	Wal	....	8200	194	72
Menominee J	5450	Wis RAU	4¾x6	36.1	T	C	Lng	Fin	FS	Strm	G	Mon	Det	DP	Eis	....	Cott	A	4	Spic	Tut	W	Timk	....	11.6	61.43	Ros	36x6	40x6†	Stn	Fir	....	160	80
Moreland 20J	5350	Cont B2	4¾x6	36.1	L	C	Own	Fin	F	Mas	G	Con	Own	DD	Dix	....	Own	A	4	Ther	US	W	Timk	....	10	49.6	Ros	36x6	40x6†	Smi	....	9000	142	....
Nelson & LeMoon FC5	....	Cont B2	4¾x6	36	L	C	Chic	PT	F	Strm	G	Pier	B-Li	DD	Bos	W	B-Li	A	4	Own	Tut	W	Timk	....	12	....	Lav	36x6	40x6†	Pru	Gdy	8000	Op	80
Old Reliable D	5500	Wis RAU	4¾x6	36.1	...	C	Chic	PT	FS	Strm	V	Mon	War	WD	Bos	....	DSe	A	4	Spic	Shel	W	Shel	½Fl	10.25	41.5	Ros	36x5	40x6	StM	....	8400	168	80
Oneida E9	5460	Oneida	4½x5½	32.4	H	C	Own	C	...	Strm	...	Own	Own	DP	Bos	....	Own	A	4	Own	Math	W	Own	½Fl	11.66	66	....	36x6	40x12	....	....	9170	180	....
Packard EF	5950	Own	5 x5½	40	L	C	....	Fin	F	Own	P	Own	Own	DP	Dix	Bj	Own	A	4	Spic	....	W	Own	Flot	10	66	Own	36x6	40x6	Own	Own	8650	156	57.2
Parker M20	....	Wis RAU	4¾x6	36.1	L	C	Own	PT	F	Strm	G	Sim	B-Li	DD	Bos	W	War	A	4	Bld	....	W	Own	Flot	10	51.1	Ros	36x6	40x6†	Smi	....	8000	160	78
Pierce Arrow R10	5700	Own	4½x6¾	32.4	T	C	....	....	F	Strm	F	Own	....	DD	Del	....	....	A	4	....	....	W	....	....	10.1	61.2	....	36x5	40x6†	Day	....	9300	168	85
Reynolds 10A	....	Hink HA1600	4½x5½	32.4	H	C	Lng	Fin	F	Strm	G	Hink	Covt	....	Bos	W	Covt	A	4	Sned	Per	W	Shel	....	10	51.9	Lav	36x6	40x6†	Smi	....	....	176	80
Rowe FW	5550	Wis VAU	4½x6	32.4	L	C	Fed	H	F	Zen	G	Sim	B-Li	DP	Bos	....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	8.7	40.7	Ros	36x6	40x6†	Hoo	....	8300	169	75
Royal	....	Wis RAU	4¾x5½	36.1	T	C	....	H	...	Strm	...	Mon	....	WD	Bos	Op	Own	...	..	Own	Mer	W	Timk	....	....	....	Ros	36x6	42x6†	....	....	....	168	....
*Sandow L	4745	Cont E4	4½x5½	32.4	L	C	....	Fin	FS	Strm	...	Mon	....	D	Bos	....	B-Li	A	4	Spic	GC	W	Timk	....	12	46.6	Ros	36x6	40x6†	Stn	....	7800	175	70
Sanford W50	5100	Cont E4	4½x5½	32.4	L	G	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	....	B-Li	A	4	Spic	Per	W	Shel	½Fl	10.75	52.03	Ros	36x5	40x6†	Hoo	Fir	8070	174	75
*Schacht	....	Buda YTU	4½x6	32.4	L	G	Own	PT	F	Sheb	G	Dup	Own	C	Bos	....	Own	A	8	M-E	Nat	W	Own	Flot	....	....	Own	36x5	40x6†	StM	....	8000	168	70
Selden 5A	5770	Cont B2	4¾x6	36.1	L	C	Lng	Fin	F	Strm	G	Con	Det	D	Eis	....	B-Li	A	4	Spic	SP	W	Timk	Flot	10.25	54.8	Gem	36x6	40x12	Stn	....	9800	164	77½
Service 101	5275	Buda YU	4½x6	32.4	L	C	....	Fin	F	Strm	G	Sim	B.B.	DP	Eis	....	....	A	4	Spic	....	W	Timk	....	10.25	49.6	Ros	36x6	40x6†	....	....	8760	171	75
Signal R	5300	Cont B2	4¾x6	36.1	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	....	B-Li	A	4	Spic	Det	W	Timk	Flot	11.6	56.43	Ros	36x6	40x12	Smi	Gdy	9510	180	80
*Standard 86	....	Cont E7	4½x5½	32.4	L	C	Lng	Fin	S	Strm	V	Mon	B-Li	DD	Eis	....	B-Li	A	4	Spic	Per	W	Timk	Flot	13.66	66	Gem	36x6	40x6†	Day	....	8100	160	75
*Sterling 5-Worm	....	Ster EU	5 x6¼	40	L	C	Own	C	F	Rayf	V	Wau	M-E	WD	Eis	....	Own	A	3	Spic	Mat	W	Timk	Flot	8.8	39.7	Ros	36x6	40x6†	Pru	....	9600	168	92
*Sterling 5-Chain	....	Ster EU	5 x6¼	40	L	C	Own	C	F	Rayf	V	Wau	M-E	WD	Eis	....	Own	A	6	UM	Mat	C	Own	D	7.4	42.5	Ros	36x6	40x6†	Pru	....	10000	174	91
Super Truck 100	5500	Wis	4¾x6	36.1	L	C	....	Fin	F	Zen	G	Sim	Full	....	Spl	....	Full	A	4	Spic	Shel	W	Shel	½Fl	10.25	49.2	Ros	36x5	40x6	Smi	....	8500	164	....
*Tiffin	5850	Cont B2	4¾x6	36.1	L	C	Own	Fin	FS	Sheb	G	Con	B.B.	DP	Bos	W	Cott	A	4	Pet	Kal	W	Shel	....	10.25	53.3	Ros	36x6	40x5†	Smi	....	8400	168	80
Titan 6	5400	Buda YTU	4½x6	32.4	L	C	B&W	ZZT	F	Strm	G	Sim	B.B	DP	Eis	....	Cott	A	4	Pet	Shel	I	Cl	D	11	59	Lav	36x5	40x6†	Cla	....	9100	156	70
Twin City 4-Wh. Drive-A	5250	Wis JA	5⅛x6	46.2	T	C	....	H	FS	Strm	G	Pier	M-E	WD	KW	....	Cott	A	3	....	....	I	....	½Fl	....	....	Ros	36x5	....	....	....	8000	140	60
*United V 5	5100	Buda YTU	4½x6	32.4	L	C	Mod	....	F	Strm	G	Sim	Full	DD	Eis	Opt	Full	A	4	Bld	Bea	I	Cl	D	12.5	75.36	Ros	36x5	40x6†	Cla	....	9150	160	70
U. S., T	....	Buda ATU	4¾x6½	36.1	...	C	Lng	Fin	F	Strm	V	Sim	B-Li	DD	Eis	Opt	B-Li	A	4	Opt	Shel	W	Shel	½Fl	10.25	54.8	Lav	36x6	40x6†	Smi	....	9700	172	90
Walter S	5600	Wau DU	4½x6¼	32.4	L	G	Bus	Fin	F	Strm	G	Own	B-Li	DP	Bos	W	War	A	4	M-E	Stan	I	Own	D	9	45	Ros	36x6	40x6†	Day	....	8000	168	55
Ward La France 5A	5590	Own	5 x6¼	40	L	C	Own	Fin	F	Zen	G	....	B-Li	DP	Bos	....	B-Li	A	4	M-E	Mer	W	Timk	....	8.8	42.59	Ros	36x6	40x6†	Smi	....	9300	190	85
White 45	5000	Own	4¼x5¾	28.9	L	C	....	Fin	F	Own	V	Own	Own	D	....	....	....	U	4	Own	....	R	Own	Flot	....	....	Own	36x6	40x6†	....	....	7925	174	....
Wilcox F	....	Buda	4¾x6½	36.1	L	C	....	PT	S	Strm	V	Dup	Own	C	Bos	....	Own	A	4	Spic	Shel	W	Wis	½Fl	10.25	56.58	Own	36.5	40x12	Smi	....	9000	162	80
Wilson H	5275	Own	4½x5½	32.4	L	C	....	Fin	FS	Mar	V	Pier	B.B.	DP	Eis	....	Own	A	4	K-B	Per	W	Timk	....	10.25	49.6	Ros	36x6	40x6†	Smi	....	7500	160	80
*Winther 109	5250	Wis VAU	4½x6	32.4	L	G	Brm	PT	F	Mas	V	Dup	B.B.	DP	Eis	W	B-Li	A	4	Bld	Math	J	Cl	D	12	60.5	Ros	36x5	40x6†	Cla	....	8300	162	80
5½, 6 and 7 Ton																																		
Aetna 160	4375	Wis RBU	5 x6	40	L	G	GO	PT	F	Zen	G	Pier	B.B.	P	Bos	....	Cott	A	4	Spic	Shel	W	Shel	½Fl	10.75	49.61	Ros	36x6	40x6†	....	....	7500	180	75
*Available H7	6875	Own	5 x6	40	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	....	B-Li	A	4	Spic	....	R	Sav	½Fl	14	57.6	Ros	36x6	40x14	Smi	....	10300	190	90
*Bridgeport 6D	4500	Buda YTU	4½x6	32.4	L	G	Own	....	FS	Strm	...	Pier	B.B.	....	Eis	....	....	A	4	Hart	....	W	....	....	13	....	Ros	36x6	36x12	Arc	....	12000	170	75
Couple Gear LD6	7450	Wis	5¾x7	52.8	T	G	Idl	H	F	Strm	G	....	....	....	Eis	Own	Own	...	5	Own	Tut	B	Own	....	12	....	Own	36x5†	36x6	Own	Own	12000	144	55
Doane 6	....	Wau P	4¾x6¾	36.1	L	C	....	C	S	Mas	G	Wau	....	DD	Bos	....	....	U	3	....	....	C	Own	D	10.5	....	Lav	36x6	40x6†	....	....	8500	178	79
Garford 69	....	Wis JU	5.1x5½	41.6	T	C	Own	Fin	F	Rayf	G	Sim	B-Li	DD	Eis	....	....	A	..	Spic	Per	C	Own	D	11	....	Ros	36x6	40x7†	Smi	....	9350	128	....
Hall	5100	Cont E4	4¼x5½	28.9	L	G	Own	Fin	FS	Zen	G	Dup	B-Li	DP	Bos	....	B-Li	U	..	Opt	Det	C	Timk	D	12	....	Gem	36x5	40x6†	Smi	....	7530	Op	....

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels
5½, 6, 7 Ton Con'd		1		2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23			
Kelley-Springfield K60	5500	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	Own	C	Eis	W	Covt	A	3	Own	Per	C	Own▼	D	12.39	45.2	Gem	36x6	40x7†	StM	.....	8900	150	93
Maccar G1	5500	Cont B2	4¾x6	36	L	C	Own	PT	F	Strm	G	Dup	B-Li	DD	Spl	.....	B-Li	U	4	Own	Own	W	Timk	Flot	10.2	49.6	Ros	36x5	40x6†	Day	Fir	8750	186	70
MacDonald A	5750	Buda YTU	4½x6	32.4	L	C	Own	PT	F	Strm	G	Dup	B-Li	DD	Spl	.....	B-Li	U	4	Own	Own	....	Own	D	17.5	77	Own	40x7	Opt	Opt	.....	6000	. . .	66
MacDonald A	5750	Own	5 x6	40	L	C	Own	Fin	S	Zen	G	Own	Own	DP	Aer	.....	Own	UJ	3	Spic	Mer	C	Own	D	10.50	33.7	Own	36x6	40x12	Sch	.....	8672	Op	73
Mack AC	5750	Own	5 x6	40	L	C	Own	Fin	S	Zen	G	Own	Own	DP	Aer	.....	Own	UJ	3	Spic	Mer	C	Own	D	11.58	37.1	Own	36x7	40x7†	Sch	.....	9050	Op	73
Mack AC	6000	Own AC	5 x6	40	L	C	Own	Fin	S	Zen	G	Own	Own	DP	Aer	.....	D-Se	A	4	Spic	Shel	C	Shel	D	10.86	54.9	Ros	36x6	40x7†	Smi	.....	10240	136	78
Old Reliable K, L, M	6250	Wau PU7	4¾x6¼	36.1	...	C	Chic	PT	FS	Strm	G	Wau	War	WD	Bos	.....	Own	...	..	Own	Mer	W	Timk	.....	.....	.....	Ros	36x6	40x6†	.....	.....	.....	168	....
Royal 6	.....	Wis RBU	4¾x6	36.1	...	C	.....	H	...	Strm	G	Mon	.....	WD	Bos	Op	Own	...	..	Own	Mer	W	Timk	.....	.....	.....	Ros	36x7	40x7†	.....	.....	.....	168	....
Royal 7	.....	Wis RBU	5¼x7	44.1	...	C	.....	H	...	Strm	...	Mon	.....	WD	Bos	Op	Own	A	..	.....	Mer	W	Timk	.....	.....	.....	Ros	36x6	40x7†	Pru	.....	11000	174	91
Sterling 7½-Chain	.....	Ster EU	5 x6¼	40	L	C	Own	C	...	Rayf	V	Wau	M-E	WD	Eis	.....	Own	A	6	UM	Mat	C	Own	D	7.26	43.6	Ros	36x6	40x12	Smi	Gdy	9000	168	80
*Tiffin 6	6050	Cont B2	4¾x6	36.1	L	C	Own	Fin	FS	Sheb	G	Con	B.B.	DP	Bos	W	Cott	A	4	Pet	Kal	W	Shel	.....	10.25	53.3	Ros	36x6	40x12	Smi	.....	9000	168	80
Wichita S	5000	Beav JB	4½x6	32.4	H	G	EM	C	F	Strm	G	Dup		C	Ber	.....	.....	A	4	Own	Det	R	Own	½Fl	14	66.3	Ros	36x6	40x6†	Smi	.....	9000	165	80
*Winther 140	5900	Wis-RBU	5 x6	40	L	G	Brm	PT	F	Mas	V	Dup	B.B.	DP	Eis	W	B-Li	A	4	Bld	Math	I	Cl	D	12	60.5	Ros	36x6	40x7†	Cla	.....	9600	162	80
Gasoline Tractor-Trucks																																		
*Columbia GT	2850	Hink HAA	4 x5¼	25.6	L	C	Lng	Fin	FS	Strm	V	Hink	Det	DP	Dix	U	Cott	A	4	Spic	Per	I	Rus	D	9.5	48.8	Own	36x4	36x7	Det	Fir	4200	112	40
*Federal Light Duty	3200	Cont C4	4⅛x5¼	27.2	L	C	Own	Fin	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Math	W	Timk	.....	9.2	40.7	Gem	36x4	36x7	.....	Fir	4700	110	....
*Federal Heavy Duty	4150	Cont E4	4½x5½	32.4	L	C	Own	Fin	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Math	W	Timk	.....	12	59.8	Gem	36x5	36x5†	.....	Fir	6800	114	....
*Garford 70H	.....	Buda HTU	4¼x5½	28.9	L	C	Own	Fin	F	Strm	G	Sim	B-Li	DD	Spl	.....	.....	A	4	Spic	Per	W	Timk	.....	.....	.....	Ros	36x4	36x7	.....	.....	4750	119	....
*Garford 77C	.....	Wis AU	4¾x5½	36.1	T	C	Own	Fin	F	Rayf	G	Sim	B-Li	DD	Eis	.....	.....	A	4	Spic	Per	W	Timk	.....	.....	.....	Ros	36x5	40x5†	Smi	.....	7200	105	....
*Garford 68	.....	Wis AU	4¾x5½	36.1	T	C	Own	.....	F	Rayf	G	Sim	B-Li	.....	Eis	.....	.....	A	4	Spic	Per	C	Own	D	.....	.....	Ros	36x6	40x6	Smi	.....	8450	102	....
Hewitt-Ludlow 6-Ton	.....	Buda HTU	4¼x5½	28.9	..	..	.....	.....	F	Strm	...	.....	B.B.	.....	Bos	.....	.....	.....	.....	.....	.....	C	.....	D	.....	.....	Lav	36x5	36x4†	.....	.....	4000	...	....
Hood	1350	Own	3¾x3¾	22.5	T	C	Idl	.....	S	Holl	G	.....	.....	D	.....	.....	.....	U	2	Own	Lah	C	Own	.....	8	24	Own	20x3½	20x5	Own	.....	2900	60	65
*Jumbo C	3450	Buda HTU	4¼x5½	28.9	L	C	Own	Fin	F	Zen	V	Dup	Full	D	NE	Op	Full	U	4	Arv	Det	I	Cl	D	9	43.2	Jac	36x4	36x7	Day	.....	4450	152	60
*Knox 35	6000	Own 35	5 x5½	40	H	C	Fed	H	F	Zen	V	Own	Own	DP	Wag	GD	Own	A	3	Own	SP	W	Timk	D	12	58	Ros	36x4	38x6†	Wau	.....	8500	108	60
*Knox 36—3-Ton	6500	Own 35	5 x5½	40	H	C	Fed	H	F	Zen	V	Own	Own	DP	Wag	GD	Own	A	3	Own	SP	W	Timk	D	12	58	Ros	36x4	38x6†	Wau	.....	10000	108	85
Koehler MT	3450	Her CU3	4 x5½	25.6	L	C	Own	.....	F	Zen	G	Sim	B-Li	D	Eis	.....	B-Li	A	4	Spic	Math	W	Timk	.....	9.25	37	Lav	36x4	36x7†	Wau	.....	4750	142	....
Kuhn	.....	Wis	4¼x5½	28.9	T	C	.....	H	S	Rayf	...	.....	.....	C	Bos	.....	.....	...	4	.....	.....	B	Own	.....	.....	.....	.....	36x7	36x7†	.....	.....	9000	138	....
*Lombard 40HP	.....	Spec 6	5½x6¾	72.7	...	C	Spec	H	F	Strm	P	.....	.....	D	.....	.....	Spec	A	.....	.....	.....	W	.....	.....	.....	.....	Spe	.....	.....	.....	.....	8000	...	90
Lombard 50 H.P	.....	Spec 4	5 x6¼	40	...	C	Spec	H	F	Strm	P	.....	.....	D	.....	.....	Spic	A	.....	.....	.....	W	.....	.....	.....	.....	Spe	.....	.....	.....	.....	4500	...	85
Mack AB 5-Ton	3400	Own AB	4 x5	25.6	L	C	Own	C	S	Zen	G	Own	B-Li	DD	Aer	.....	B-Li	U	4	Bld	Mer	C	Own	D	10.5	42.2	Own	36x4	36x4†	Sch	.....	4940	120	....
Mack AC 7-Ton	4950	Own AC	5 x6	40	L	C	Own	PT	S	Zen	G	Own	Own	DP	Aer	.....	Own	UJ	3	Spic	Mer	C	Own	D	10.7	34.6	Own	36x5	40x5†	Sch	.....	7670	119	....
Mack AC 10-Ton	5500	Own AC	5 x6	40	L	C	Own	PT	S	Zen	G	Own	Own	DP	Aer	.....	Own	UJ	3	Spic	Mer	C	Own	D	11.5	37.1	Own	36x6	40x6†	Sch	.....	8250	119	....
Mack AC 13-Ton	5750	Own AC	5 x6	40	L	C	Own	PT	S	Zen	G	Own	Own	DP	Aer	.....	Own	UJ	3	Spic	Mer	C	Own	D	12.9	41.5	Own	36x6	40x12	Sch	.....	8272	119	....
Mack AC 15-Ton	6000	Own AC	5 x6	40	L	C	Own	PT	S	Zen	G	Own	Own	DP	Aer	.....	Own	UJ	3	Spic	Mer	C	Own	D	14.1	45.2	Own	36x7	40x7†	Sch	.....	8650	119	....
*Master T	3740	Buda HU	4¼x5½	28.9	L	C	Chic	PT	FS	Mas	V	McC	Full	DP	Eis	.....	B-Li	U	4	Spic	Det	R	Walk	Flot	8	32	Ros	34x4	36x4†	Wal	.....	4500	110	76
Rennoc 8-Ton	.....	Buda	4½x5½	27.2	L	C	.....	.....	F	Strm	...	Pier	.....	D	Spl	.....	War	...	4	Hart	Row	W	Wis	.....	.....	.....	Lav	35x5	36x7	.....	.....	5050	116	60
Watson	.....	Cont E4	4½x5½	32.4	L	G	Jam	C	FS	Strm	G	Pier	B-Li	DP	Sim	.....	B-Li	U	4	Spic	Shel	W	Timk	Flot	8.75	.....	Gem	34x4	36x10	.....	.....	6500	80	37

Electric Commercial Cars

Electric Commercial Cars

E. C. M. Name and Model Number	Carrying Capacity	Chassis Weight	Chassis Price	Maximum Speed	Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Springs	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent of Weight on Rear Wheels
*Ward WS 2	750	1500	.....	13	Opt	45	G-E	Own	4	W	Shel	Shel	32x3	32x3	Own	88	60
C-T 1½	1000	1800	2200	14	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x3	36x3	W	89¼	60
Walker M	1000	2300	.....	15	Opt	60	West	West	5	O	Own	Math	34x3	36x3½	Ross	93	66
Atlantic 1C	2000	2770	.....	12	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x4	Ross	103	65
*Ward WA	1250	2730	.....	12	Opt	45	G-E	G-E	4	W	Shel	Shel	32x3	34x3½	Own	90	60
C-T 1	2000	2500	2675	14	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x3½	36x4	W	101	60
Lansden 1	.....	2900	.....	12	.....	50	.....	.....	.....	.....	.....	.....	36x3	36x3½	.....	.....	....
Steinmetz	.....	.....	.....	16	Exide	.....	Own	.....	4	B	.....	.....	32x4*	32x4*	.....	Opt	....
Walker K	2000	2700	.....	14	Opt	60	West	West	5	O	Own	Math	34x3½	36x4	Ross	96	66
*Ward WB	2000	3430	.....	10	Opt	40	G-E	G-E	4	W	Shel	Shel	34x3½	36x4	Own	102	60
Atlantic 2C	4000	3590	.....	11	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x3†	Ross	115	65
C-T 2	4000	3500	3100	12	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x4	36x4†	W	116	60
Lansden 2	.....	4400	.....	11	.....	50	.....	.....	.....	.....	.....	.....	36x4	36x3	.....	.....	....
Walker L	4000	3800	.....	13	Opt	60	West	West	5	O	Own	Math	38x4	38x6	Ross	112	66
Ward WD	4000	4500	.....	8.5	Opt	35	G-E	G-E	4	W	Shel	Shel	36x4	36x7	Own	114	60
Atlantic 3C	7000	5220	.....	10	Opt	.....	G-E	G-E	5	C	Timk	.....	36x5	40x5†	Ross	135	65
C-T 3½	7000	5000	4500	11	Opt	50	G-E	Own	4	I	Dead	Shel	36x6†	36x4†	W	122	55
Lansden 3½	.....	5700	.....	10	.....	45	.....	.....	.....	.....	.....	.....	36x5	36x4	.....	.....	....
*Ward WF	7000	6600	.....	7	Opt	30	G-E	G-E	5	W	Shel	Shel	36x5	36x8	Own	132	70
Atlantic 5C	10000	6230	.....	9	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x5†	Ross	144	65
Couple Gear H	7000	9000	.....	10	Phil	30	Own	Own	5	B	Own	Tut	36x5†	36x5†	Own	96	55
Couple Gear A	10000	10000	.....	7	Phil	30	Own	Own	5	B	Own	Tut	36x5†	36x5†	Own	96	75
C-T 5	10000	6000	5000	10	Opt	50	G-E	Own	4	I	Dead	Shel	36x7	36x5†	W	132	55
Lansden 5	.....	7500	.....	9	.....	40	.....	.....	.....	.....	.....	.....	36x6	36x5	.....	.....	....
Walker P	7000	5600	.....	11	Opt	50	West	West	5	O	Own	Math	36x5	38x5†	Ross	131	66
Walker N	10000	6400	.....	10	Opt	50	West	West	5	O	Own	Math	36x6	38x6†	Ross	141	66
*Ward WH	10000	8375	.....	6	Opt	26	G-E	G-E	5	W	Shel	Shel	36x7	40x10	Own	144	70
Atlantic 6C	13000	6940	.....	8	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x6	Ross	156	65
Couple Gear LH	14000	11000	.....	10	Phil	30	Own	Own	5	B	Own	Tut	36x5†	36x5	Own	96	55

Manufacturers Whose Models Are Included in Specifications on Preceding Pages

Acason—Acason Motor Truck Co., Detroit, Mich.
Ace—American Motor Truck Co., Newark, Ohio.
Acme—Acme Motor Truck Co., Cadillac, Mich.
Aetna—Aetna Motors Corp. of N. Y., New York, N. Y.
All-American—All-American Truck Co., Chicago, Ill.
All-Power—All-Power Truck Co., Detroit, Mich.
American—American Motor Truck & Tractor Co., New York, N. Y.
Apex—Hamilton Motor Co., Grand Haven, Mich.
Armleder—O. Armleder Co., Cincinnati, Ohio.
Atco—American Truck & Trailer Corp., Kankakee, Ill.
Atlantic—Atlantic Electric Vehicle Co., Newark, N. J.
Atlas—Atlas Truck Corp., York, Pa.
Atterbury—Atterbury Motor Car Co., Buffalo, N. Y.
Autocar—Autocar Co., Ardmore, Pa.
Available—Available Truck Co., Chicago, Ill.
Avery—Avery Company, Peoria Ill.
Beck-Hawkeye—Beck-Hawkeye Motor Truck Works, Cedar Rapids, Iowa.
Bell—Iowa Motor Truck Co., Ottumwa, Ia.
Belmont—Belmont Motors Corp., Lewistown, Pa.
Bessemer—Bessemer Motor Truck Co., Grove City, Pa.
Bethlehem—Bethlehem Motor Truck Corp., Allentown, Pa.
Betz—Betz Motor Truck Co., Hammond, Ind.
Birch—Birch Motor Cars, Chicago, Ill.
Bridgeport—Bridgeport Motor Truck Co., Bridgeport, Conn.
Brinton—Brinton Motor Truck Co., Philadelphia, Pa.
Brockway—Brockway Motor Truck Co., Cortland, N. Y.
C. T.—Commercial Truck Co., Philadelphia, Pa.
Capitol—Capitol Motors Corp., Fall River, Mass.
Chevrolet—Chevrolet Motor Co. of Mich., Flint, Mich.
Chicago—Chicago Motor Truck, Inc., Chicago, Ill.
Climber—Climber Motor Corp., Little Rock, Ark.
Clydesdale—Clydesdale Motor Truck Co., Clyde, Ohio.
Collier—Collier Motor Truck Co., Bellevue, Ohio.
Columbia—Columbia Motor Truck & Trailer Co., Pontiac, Mich.
Comet—Comet Automobile Co., 156 S. Water St., Decatur, Ill.
Commerce—Commerce Motor Car Co., Detroit, Mich.
Concord—Abbot-Downing Truck & Body Co., Concord, N. H.
Conestoga—Conestoga Motor Truck Co., Lancaster, Pa.
Cook—Cook Motors Corp., Kankakee, Ill.
Corbitt—Corbitt Motor Truck Co., Henderson, N. C.
Couple Gear—Couple Gear Freight Wheel Co.., Grand Rapids, Mich.
Dart—Dart Truck & Tractor Corp., Waterloo, Ia.
Day-Elder—Day-Elder Motors Corp., Newark, N. J.
Dearborn—Dearborn Truck Co., Chicago, Ill.
Defiance—Defiance Motor Truck Co., Defiance, Ohio.
DeKalb—DeKalb Wagon Co., DeKalb, Ill.
Denby—Denby Motor Truck Co., Detroit, Mich.
Dependable—Dependable Truck & Tractor Co., Galesburg, Ill.
Diamond T—Diamond T Motor Car Co., Chicago, Ill.
Diehl—Diehl Motor Truck Works, Philadelphia, Pa.
Doane—Doane Motor Truck Co., San Francisco, Cal.
Dodge—Dodge Bros., Detroit, Mich.
Dorris—Dorris Motor Car Co., St. Louis, Mo.
Double Drive—Double Drive Truck Co., Chicago, Ill.
Douglas—Douglas Motors Corp., Omaha, Nebr.
Duplex—Duplex Truck Co., Lansing, Mich.
Duryea—Duryea Motors, Inc., Philadelphia, Pa.
Duty—Duty Motor Co., Greenville, Ill.

Eagle—Eagle Motor Truck Corp., St. Louis, Mo.
Ellsworth—Mills-Ellsworth Co., Keokuk, Ia.
Elmira—Elmira Commercial Motor Car Co., Inc., Owego, N. Y.
Erie—Erie Motor Truck Mfg. Co., Erie, Pa.

F. W. D.—Four Wheel Drive Auto Co., Clintonville, Wis.
Fageol—Fageol Motors Co., Oakland, Cal.
Famous—Famous Trucks, Inc., St. Joseph, Mich.
Fargo—Fargo Motor Truck Co., Chicago, Ill.
Federal—Federal Motor Truck Co., Detroit, Mich.
Ford—Ford Motor Co., Highland Park, Mich.
Forschler—Forschler Motor Truck Mfg. Co., New Orleans, La.
Front Drive—Double Drive Truck Co., Chicago, Ill.
Fulton—Fulton Motors Corp., New York, N. Y.

G. M. C.—General Motors Truck Co., Pontiac, Mich.
G. W. W.—Wilson Truck Mfg. Co., Henderson, Ia.
Garford—Garford Motor Truck Co., Lima, Ohio.
Gary—Gary Motor Truck Co., Gary, Ind.
Gersix—Gersix Mfg. Co., Seattle. Wash.
Giant—Giant Truck Corp., Chicago Heights, Ill.
Graham—Graham Brothers, Evansville, Ind.
Gramm-Bernstein—Gramm-Bernstein Motor Truck Co., Lima, Ohio.
Grant—Grant Motor Car Corp.. Truck Division, Cleveland, Ohio.

Hahn—Hahn Motor Truck & Wagon Co., Hamburg, Pa.
Hal-Fur—Hal-Fur Motor Truck Co., Cleveland, Ohio.
Hall—Lewis-Hall Motors Corp., Detroit, Mich.
Harvey—Harvey Motor Truck Co., Harvey, Ill.
Hawkeye—Hawkeye Truck Co., Sioux City, Ia.
Hendrickson—Hendrickson Motor Truck Co., Chicago, Ill.
Hewitt-Ludlow—Ralston Iron Works, San Francisco, Cal.
Highway-Knight—Highway Motors Co., Chicago, Ill.
Higrade—Higrade Motors Co., Harbor Springs, Mich.
H & M—H & M Motor Truck Co., Inc., Baltimore, Md.
Hood—Hood Mfg. Co., Seattle, Wash.
Hoover—Hoover Wagon Co., York. Pa.
H. R. L.—H. R. L. Motor Co., Seattle, Wash.
Huffman—Huffman Bros. Co., Elkhart, Ind.
Hurlburt—Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.

Independent—Independent Motor Co., Youngstown, O.
Independent—Independent Motor Truck Co., Inc., Davenport, Ia.
Indiana—Indiana Truck Corp., Marion, Ind.
International—International Harvester Co., Chicago, Ill.

Jackson—Jackson Motors Corp., Jackson, Mich.
J and J—The Lorain Motor Truck Co., Lorain, O.
Jumbo—Nelson Motor Truck Co., Saginaw, Mich.

Kalamazoo—Kalamazoo Motor Corp., Kalamazoo, Mich.
Kankakee—Kankakee Automobile Co., Kankakee, Ill.
Karavan—Caravan Motors Co., Portland. Ore.
Kearns—Kearns-Dughie Motors Co., Danville. Pa.
Keldon—House Cold Tire Setter Co., St. Louis, Mo.
Kelly-Springfield—Kelly-Springfield Motor Truck Co., Springfield, Ohio.
Keystone—Keystone Motor Truck Corp., Philadelphia, Pa.
Kimball—Kimball Motor Truck Co., Los Angeles, Cal.
King Zeitler—King Zeitler Co., Chicago, Ill.
Kissel—Kissel Motor Car Co., Hartford, Wis.
Kleiber—Kleiber & Co., Inc., San Francisco, Cal.
Knox—Knox Motors Co., Springfield, Mass.
Koehler—H. J. Koehler Motors Corp., Bloomfield, N. J.
Kuhn—Kuhn Tractor Truck Co., Seattle, Wash.

Lange—Lange Motor Truck Co., Pittsburgh, Pa.
Lansden—The Lansden Company, Inc., Danbury, Conn.
Larrabee-Deyo—Larrabee-Deyo Motor Truck Co., Inc., Binghamton. N. Y.
L. M. C.—Louisiana Motor Car Co., Shreveport, La.
Lombard—Lombard Auto Tractor Truck Corp., New York, N. Y.
Lone Star—Lone Star Truck & Tractor Assn., San Antonio, Texas.
Luedinghaus—Luedinghaus-Espenschied Wagon Co., St. Louis, Mo.
Luverne—Luverne Automobile Co., Luverne, Minn.

Maccar—Maccar Truck Co., Scranton, Pa.
MacDonald—MacDonald Truck & Tractor Co., San Francisco, Cal.
Mack—International Motor Co., New York, N. Y.
Marshall—Marshall Mfg. Co., Chicago, Ill.
Master—Master Trucks, Inc., Chicago, Ill.
Maxwell—Maxwell Motor Co., Inc., Detroit, Mich.
Menominee—Menominee Motor Truck Co., Menominee, Mich.
Moline—Moline Plow Co., Moline, Ill.
Moreland—Moreland Motor Truck Co., Los Angeles, Cal.
Mutual—Mutual Truck Co., Sullivan, Ind.

Napoleon—Napoleon Motors Co., Traverse City, Mich.
Nash—Nash Motors Co., Kenosha, Wis.
Nelson-LeMoon—Nelson & LeMoon, Chicago, Ill.
Netco—New England Truck Co., Fitchburg, Mass.
Niles—Niles Motor Truck Co., Pittsburgh, Pa.
Noble—Noble Motor Truck Co., Kendallville, Ind.
Northway—Northway Motors Co., Natick, Mass.
Northwestern—Starr Carriage Co., Seattle, Wash.
Norwalk—Norwalk Motor Car Co., Martinsburg, W. Va.

O. K.—Oklahoma Auto Mfg. Co., North Muskogee, Okla.
Ogden—Ogden Motor & Supply Co., Chicago, Ill.
Old Hickory—Kentucky Wagon Mfg. Co., Louisville, Ky.
Old Reliable—Old Reliable Motor Truck Co., Chicago, Ill.
Oldsmobile—Olds Motor Works, Lansing, Mich.
Oneida—Oneida Motor Truck Co., Green Bay, Wis.
Orleans—New Orleans Motor Truck Mfg. Co., New Orleans, La.
Oshkosh—Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.

Packard—Packard Motor Car Co., Detroit, Mich.
Paige—Paige-Detroit Motor Car Co., Detroit,, Mich.
Parker—Parker Motor Truck Co., Milwaukee, Wis.
Patriot—Patriot Motors Co., Lincoln, Neb.
Pierce-Arrow—Pierce-Arrow Motor Car Co., Buffalo, N. Y..
Pioneer—Pioneer Truck Co., Chicago, Ill.
Pittsburgher—Pittsburgh Truck Mfg. Co., Pittsburgh, Pa.
Power—Power Truck & Tractor Co., Detroit, Mich.

Rainier—Rainier Motor Corp., Flushing, L. I., N. Y.
Reliance—Reliance Motor Truck Co., Appleton, Wis.
Rennoc—Rennoc-Leslie Motor Co., Philadelphia, Pa.
Reo—Reo Motor Car Co., Lansing, Mich.
Republic—Republic Motor Truck Co., Inc., Alma, Mich.
Reynolds—Reynolds Motor Truck Co., Mt. Clemens, Mich.
Riker—Locomobile Co. of America, Bridgeport, Conn.
Rowe—Rowe Motor Mfg. Co., Lancaster, Pa.
Royal—Royal Motor Truck of N. Y., New York, N. Y.

Sandow—Sandow Motor Truck Co., Chicago, Ill.
Sanford—Sanford Motor Truck Co., Syracuse, N. Y.
Schacht—G. A. Schacht Motor Truck Co., Cincinnati, O.
Schwartz—Schwartz Motor Truck Co., Reading, Pa.
Selden—Selden Truck Corp., Rochester, N. Y.
Seneca—Seneca Motor Car Co., Fostoria, O.
Service—Service Motor Truck Co., Wabash, Ind.
Shaw—Walden W. Shaw Livery Co., Chicago, Ill.
Signal—Signal Motor Truck Co., Detroit, Mich.
Southern—Southern Truck & Car Corp., Greenboro, N. C.
Standard—Standard Motor Truck Co., Detroit, Mich.
Steinmetz—Steinmetz Electric Motor Car Corp., Baltimore, Md.
Sterling—Sterling Motor Truck Co., Milwaukee, Wis.
Stewart—Stewart Motor Corp., Buffalo, N. Y.
Stoughton—Stoughton Wagon Co., Stoughton, Wis.
Success—Webberville Truck Co., Webberville, Mich.
Super Truck—OConnell Motor Truck Co., Waukegan, Ill.
Sullivan—Sullivan Motor Truck Co., Rochester, N. Y.
Superior—Superior Motor Truck Co., Atlanta, Ga.

Texan—Texas Motor Car Asso., Fort Worth, Texas.
Tiffin—Tiffin Wagon Co., Tiffin, Ohio.
Titan—Titan Truck Co., Milwaukee, Wis.
Tower—Tower Motor Truck Co., Greenville, Mich.
Traffic—Traffic Motor Truck Corp., St. Louis, Mo.
Transport—Transport Truck Co., Mt. Pleasant, Mich. .
Traylor—Traylor Eng. & Mfg. Co., Cornwells, Pa.
Triangle—Triangle Motor Truck Co., St. Johns, Mich.
Triumph—Triumph Truck & Tractor Co., Kansas City, Mo.
Twin City F. W. D.—Twin City Four Wheel Drive Co., Inc., St. Paul. Minn.
Twin City—Minneapolis Steel & Mach. Co., Minneapolis, Minn.

Ultimate—Vreeland Motor Co., Inc., Newark. N. J.
Union—Union Motor Truck Co., Bay City, Mich.
United—United Motors Co., Grand Rapids, Mich.
U. S.—United States Motor Truck Co., Cincinnati, Ohio.

Velie—Velie Motors Corp., Moline, Ill.
Vim—Vim Motor Truck Co., Philadelphia, Pa.

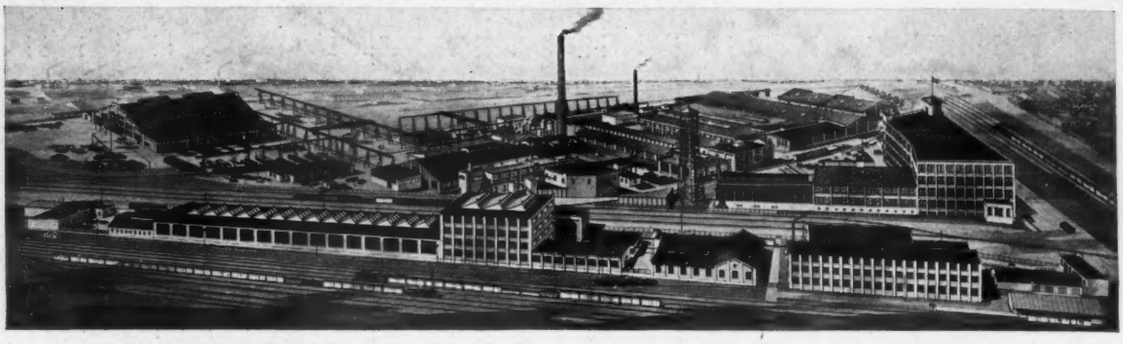
Walker—Walker Vehicle Co., Chicago, Ill.
Walker-Johnson—Walker-Johnson Truck Co., Woburn, Mass.
Walter—Walter Motor Truck Co., New York, N. Y.
Ward—Ward Motor Vehicle Co., Mt. Vernon, N. Y.
Ward La France—Ward La France Truck Co., Inc., Elmira, N Y.
Watson—Watson Wagon Co., Canastota, N. Y. .
Wells—Evans Truck & Axle Co., Auburn, Ind.
White—White Co., Cleveland. Ohio.
White Hickory—White Hickory Motor Corp., Atlanta, Ga.
Wichita—Wichita Falls Motor Co., Wichita Falls, Tex.
Wilcox—H. E. Wilcox Motor Co., Minneapolis, Minn.
Wilson—J. C. Wilson Co., Detroit, Mich.
Winther—Winther Motor Truck Co., Kenosha, Wis.
Witt-Will—Witt-Will Co., Inc., Washington, D. C.
Wolverine—American Commercial Car Co., Detroit, Mich.

Price List of Truck Pneumatic Tire Casings, With Capacities and Inflation Pressures of Larger Sizes

	30 3½	32 4	34 4	32 4½	34 4½	33 5	35 5	36 x 6			38 x 7			40 x 8			42 x 9			44 x 10		
								Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure
Ajax Rubber Co., Inc., New York, N. Y.																						
Ajax Cord, non-skid	.....	.....	.....	.....	.....	.....	.....	119.35	2200	90	168.80	3000	100	217.45	4000	100	.....	....	...	.....	....	...
American Rubber & Tire Co., Akron, O.																						
Americord, non-skid	.....	.....	.....	.....	.....	.....	.....	117.75	2000	90	166.00	3000	100	213.85	4000	110	.....	....	...	.....	....	...
Baltimore Rubber Tire Mfg. Co., Baltimore, Md.																						
Box Tread, non-skid	20.39	41.88	44.65	.....	52.32	.....	68.42	.....	....	...	.....	....	...	.....	...	...	.....	....	...	.....	....	...
Atlantic, non-skid	23.20	36.80	39.60	.....	.....	.....	.....	.....	....	...	.....	....	...	.....	...	...	.....	....	...	.....	....	...
Bergougnan Rubber Corp., Trenton, N. J.																						
Bergougnan Cord, non-skid	39.60	62.50	66.80	73.35	77.65	93.10	98.00	141.00	2000	90	184.55	2700	100	239.10	650	110	.....	....	...	.....	....	...
Brictson Mfg. Co., Omaha, Neb.																						
Brictson P. P. Studded	42.85	65.15	69.45	77.85	85.40	.....	106.50	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Braender Rubber & Tire Co., Rutherford, N. J.																						
Braender Super Cord, non-skid	.....	.....	.....	.....	.....	.....	.....	132.50	2200	90	187.35	3000	100	241.40	4000	110	.....	....	...	.....	....	...
Brunswick-Balke-Collender Co., Chicago, Ill.																						
Brunswick-Cord, non-skid	37.70	60.75	64.35	68.80	72.40	85.90	90.10	128.90	2200	90	182.30	3000	100	234.85	4000	110	.....	....	...	.....	....	...
Columbia Tire & Rubber Co., Mansfield, O.																						
Columbia Fabric	26.05	41.00	43.85	.....	.....	.....	.....	.....	....	...	.....	....	...	.....	...	...	.....	....	...	.....	....	...
Columbia, non-skid	.....	62.40	66.00	74.25	78.30	89.40	92.80	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Curtis Tire & Rubber Co., Muskegon, Mich.																						
Curtis Cord, road	.....	.....	.....	.....	.....	.....	.....	119.35	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Empire Tire & Rubber Co., Trenton, N. J.																						
Empire Cord, non-skid	.....	56.55	59.60	63.70	67.05	79.55	83.40	119.35	2000	90	168.80	2700	100	217.45	3650	110	.....	....	...	.....	....	...
Erie Tire & Rubber Co., Sandusky, O.																						
Erie, non-skid	.....	.....	.....	.....	.....	.....	.....	118.00	3300	120	167.00	4200	130	215.00	5100	140	.....	....	...	.....	....	...
Falls Rubber Co., Cuyahoga Falls, O.																						
Falls Cord, neverslip	.....	.....	.....	.....	.....	.....	.....	140.00	2200	90	180.00	3000	100	230.00	4000	110	.....	....	...	.....	....	...
Federal Rubber Co. of Ill., Cudahy, Wis.																						
Federal Cord, non-skid	.....	58.75	61.95	66.20	69.75	82.75	.....	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Federal H. D. Cord, non-skid	.....	.....	.....	.....	.....	.....	91.75	119.35	2300	100	168.30	3000	110	217.45	000	120	.....	....	...	.....	....	...
Firestone Tire & Rubber Co., Akron, O.																						
Firestone Cord, non-skid	35.75	56.55	59.60	65.25	68.75	81.50	85.50	119.35	2200	90	168.80	3000	100	217.45	4000	110	272.35	5000	120	380.65	6000	130
Fisk Rubber Co., Chicopee Falls, Mass.																						
Fisk Cord, non-skid	31.15	56.20	59.45	63.50	67.05	79.60	83.50	119.35	2200	90	168.80	3000	100	217.45	000	110	272.35	5000	120	380.65	6000	130
General Tire & Rubber Co., Akron, O.																						
General Cord, non-skid	37.70	60.80	62.75	68.85	72.50	85.50	87.80	130.85	2200	90	185.15	3000	100	238.50	4000	110	298.65	5000	120	417.45	6000	130
Gillette Rubber Co., Eau Claire, Wis.																						
Gillette Safety Tread	.....	.....	.....	.....	.....	.....	.....	119.35	....	...	168.80	....	...	217.45	....	...	.....	....	...	.....	....	...
Goodrich, B. F., Rubber Co., Akron, O.																						
Goodrich Cord, ribbed	.....	.....	.....	.....	.....	.....	.....	119.35	2200	90	168.80	3000	100	217.45	4000	110	.....	....	...	.....	....	...
Goodrich Cord, Safety	.....	.....	.....	.....	.....	.....	.....	119.35	2200	90	168.80	3000	110	217.45	4000	110	.....	....	...	.....	....	...
Goodyear Tire & Rubber Co., Akron, O.																						
Goodyear Cord, ribbed	.....	.....	.....	60.50	63.70	75.60	79.25	119.35	2200	100	168.80	3000	110	217.45	4000	120	.....	....	...	.....	....	...
Goodyear Cord, All Weather	.....	.....	.....	63.70	67.05	79.55	83.40	119.35	2200	100	168.80	3000	110	217.45	000	120	272.35	5000	130	380.65	6000	140
Gordon Tire & Rubber Co., Canton, O.																						
Gordon, non-skid	35.25	58.75	60.80	69.30	75.90	85.20	92.80	140.00	2100	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Hewitt Rubber Co., Buffalo, N. Y.																						
Hewitt Cord, non-skid	.....	.....	.....	.....	.....	.....	.....	132.60	2000	90	187.50	2850	100	.....	....	...	.....	....	...	.....	....	...
Howe Rubber Co., Inc., New Brunswick, N. J.																						
Howe Ultra Cord, non-skid	.....	.....	.....	.....	.....	.....	.....	127.25	2000	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
India Tire & Rubber Co., Akron, O.																						
India Cord, non-skid	44.85	66.60	70.25	75.00	79.10	93.65	98.25	143.20	2200	90	202.50	3000	100	295.00	4000	110	.....	....	...	.....	....	...
International India Rubber Corp., S. Bend, Ind.																						
Odell Cord, non-skid	28.50	46.30	51.10	60.50	64.00	.....	75.60	119.35	2000	90	168.80	27.00	100	.....	....	...	.....	....	...	.....	....	...
Kelly-Springfield Tire Co., New York, N. Y.																						
Kelly-Springfield Cord, grooved	.....	59.75	62.50	69.75	73.25	86.00	90.00	140.00	2000	90	188.00	3000	100	236.00	4000	110	.....	....	...	.....	....	...
Kelly-Springfield Cord, B. B.	.....	64.00	68.50	73.50	77.00	91.00	94.60	140.00	2000	90	188.00	3000	100	236.00	4000	110	.....	....	...	.....	....	...
Lee Tire & Rubber Co., New York, N. Y.																						
Lee P. P., non-skid	.....	.....	.....	76.45	80.45	91.50	95.95	143.25	1970	90	202.75	2720	100	260.95	3595	110	.....	....	...	.....	....	...
Lehigh Tire & Rubber Co., New Castle, Pa.																						
Lehigh, Ribbed Fabric	22.65	35.15	37.60	46.50	49.45	53.40	56.45	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Lehigh, Non-skid Fabric	23.50	37.40	40.10	50.00	53.25	61.65	65.35	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Long Wear Tire & Rubber Co., Anderson, Ind.																						
Long Wear, non-skid	.....	61.30	63.00	68.00	72.00	85.25	89.40	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
McCreary Tire & Rubber Co., Indiana, Pa.																						
McCreary Fabric, non-skid	25.90	39.10	43.15	54.90	57.15	.....	72.40	.....	....	...	.....	....	...	.....	...	...	.....	....	...	.....	....	...
McCreary Cord, non-skid	35.75	56.00	60.45	78.60	84.95	93.20	98.55	.....	....	...	.....	....	...	.....	...	...	.....	....	...	.....	....	...
McGraw Tire & Rubber Co., Cleveland, O.																						
McGraw Cord, ribbed	32.55	59.10	62.25	66.55	70.10	83.15	87.15	131.25	2000	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
McGraw Cord, non-skid	34.25	62.20	65.55	70.00	73.75	87.50	91.75	131.25	2000	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...

Madison Tire & Rubber Co., New York, N. Y.																												
Madison Fabric, non-skid	29.45	47.50	49.80	57.50	61.45	.....	76.45	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Madison Cord, non-skid	.....	65.50	69.00	75.50	80.00	90.50	95.90	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Manhattan Tire & Rubber Co., Mansfield, O.																												
Manhattan Fabric	26.05	41.00	43.85	.....	.....	.....	.....	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Manhattan Cord	.....	62.40	66.00	74.25	78.30	89.40	92.80	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Marathon Tire & Rubber Co., Cuyahoga Falls, O.																												
Marathon Cord, Angle	.....	62.20	65.55	70.05	73.75	87.50	91.75	120.00	2200	100	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Mason Tire & Rubber Co., Kent, O.																												
Mason Cord, non-skid	38.55	57.95	60.00	65.45	69.00	80.75	85.75	119.35	2200	90	156.10	3000	100	216.40	3750	110	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Meyer Rubber Co., Columbiana, O.																												
Meyer, ribbed	23.20	36.80	39.60	49.90	53.15	.....	65.35	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Michelin Tire Co., Milltown, N. J.																												
Michelin Fabric	23.00	36.90	40.00	.....	.....	.....	.....	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Michelin Cord	.....	55.50	58.50	63.50	66.00	78.00	82.00	120.00	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Miller Rubber Co., Akron, O.																												
Miller Cord, "Geared-to-the-Road"	35.90	59.30	62.70	66.85	70.50	83.50	87.60	125.65	2200	90	177.65	3000	100	228.90	4000	110	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Mohawk Rubber Co., Akron, O.																												
Mohawk Cord, non-skid	42.00	66.85	70.35	76.70	80.30	90.75	96.20	136.00	2200	90	190.00	3000	100	240.00	4000	110	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Monarch Rubber Co., Hartville, O.																												
Monarch Cord, ribbed	32.55	59.10	62.25	66.55	70.05	83.15	87.15	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Monarch Cord, non-skid	34.25	62.20	65.55	70.05	73.75	87.50	91.75	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
National Tire & Rubber Co., E. Palestine, O.																												
Roamer Fabric, non-skid	23.80	37.70	40.60	.....	54.50	.....	67.00	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Olympian Fabric, non-skid	23.80	37.70	40.60	.....	54.50	.....	67.00	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Roamer Cord, non-skid	.....	64.15	.....	.....	77.45	.....	96.15	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Olympian Cord, non-skid	.....	64.15	.....	.....	77.45	.....	96.15	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Nebraska Tire & Rubber Co., Omaha, Neb.																												
Super Tread	25.00	39.81	42.63	53.13	56.56	.....	69.44	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Cornhusker	26.00	41.41	44.33	55.25	58.83	.....	72.22	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Norwalk Tire & Rubber Co., Norwalk, Conn.																												
Norwalk Cord, non-skid	45.00	62.80	66.20	70.75	74.55	88.35	92.70	125.20	2000	90	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Oldfield Tire Co., Cleveland, O.																												
Oldfield Cord, anti-skid	.....	.....	.....	.....	.....	.....	.....	125.30	2200	90	177.25	3000	100	228.30	3725	110	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Para Bell Tire & Rubber Co., Mansfield, O.																												
Para Bell, Fabric	26.05	41.00	43.85	.....	.....	.....	.....	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Para Bell, Cord	.....	62.40	66.00	74.25	78.30	89.40	92.80	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Pennsylvania Rubber Co., Jeannette, Pa.																												
Vacuum Cup, Cord	38.55	54.55	57.40	61.35	64.65	76.60	80.35	108.40	2200	90	153.25	3000	100	197.60	4000	110	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Perfection Tire & Rubber Co., Fort Madison, Ia.																												
Perfection, non-skid	.....	59.20	62.50	66.80	70.40	83.40	87.50	125.65	2200	90	177.65	3000	100	228.00	4000	110	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Pharis Tire & Rubber Co., Newark, O.																												
Pharis, non-skid	23.50	37.40	40.10	.....	53.25	.....	63.35	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Quaker City Rubber Co., Philadelphia, Pa.																												
Quaker City, plain	24.40	35.20	39.40	47.80	50.85	.....	61.00	.....	.....	...	.....	...	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
T. T. T., non-skid	27.30	42.55	45.25	54.95	58.70	.....	66.80	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Racine Auto Tire Co., Racine, Wis.																												
Horseshoe Cord, non-skid	37.50	58.20	61.35	65.50	69.10	81.75	86.00	123.00	....	120	174.00	....	130	223.50	....	140	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Ribbed Tread	.....	55.00	57.25	.....	65.25	.....	81.00	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Racine Rubber Co., Racine, Wis.																												
Racine Multi-Mile, Cord	.....	.....	.....	.....	.....	.....	.....	117.85	2200	90	166.65	3000	100	214.75	4000	110	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Republic Rubber Co., Youngstown, O.																												
Republic Grande Cord, ribbed	.....	58.10	61.20	67.15	70.70	.....	85.65	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Republic Grande Cord, Staggard Tread	37.50	61.15	64.40	70.70	74.45	86.00	90.15	129.00	2200	90	182.45	3000	100	235.05	4000	110	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Spreckels Savage Tire Co., San Diego, Cal.																												
Savage Cord	.....	.....	.....	.....	.....	.....	.....	117.50	1900	115	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Standard Tire Co., Willoughby, O.																												
Tiger Foot, non-skid	.....	.....	.....	.....	.....	.....	.....	128.50	2200	90	178.50	3000	100	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Stanwood Rubber Co., Inc., Elizabeth, N. J.																												
Stanwood, Whippet Tread Cord	37.50	60.50	62.50	67.00	73.00	85.00	87.75	129.00	2200	90	183.00	2300	100	235.00	4000	110	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Stanwood Whippet Tread Fabric	26.85	42.25	45.40	54.60	57.80	69.40	71.50	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Star Rubber Co., Akron, O.																												
Star Cord, All Star	.....	.....	.....	.....	.....	.....	.....	144.00	2200	90	192.00	3000	100	240.00	4000	110	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Swinehart Tire & Rubber Co., Akron, O.																												
Swinehart Cord, Hexagon		56.55	59.60	63.70	67.05	79.55	83.40	119.35	2000	90	168.80	3000	120	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Trent Rubber Co., Trenton, N. J.																												
Trent Fabric, non-skid	26.20	40.35	42.85	51.60	55.70	65.45	70.30	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Trent Cord, non-skid	38.00	58.30	62.20	66.15	70.40	83.50	87.40	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Tropical Tire & Rubber Co., New York, N. Y.																												
Tropical Fabric, non-skid	26.45	42.05	45.10	56.25	59.90	69.35	73.50	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Tropical Cord, non-skid	34.10	62.20	65.60	70.00	73.75	87.50	91.74	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Tyer Rubber Co., Andover, Mass.																												
Tyer Fabric, non-skid	24.15	37.00	40.25	50.60	54.25	.....	65.95	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Tyer Cord, non-skid	.....	60.90	62.90	67.90	70.90	84.40	87.90	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
United States Tire Co., New York, N. Y.																												
U. S. Nobby Cord, non-skid	.....	.....	.....	.....	73.85	.....	91.75	119.35	2200	90	168.80	3000	100	217.45	4000	110	272.35	5000	120	380.65	6000	130						

Many Grinding Operations Required in Manufacturing Buda Engines



Accuracy of Workmanship and Thorough Inspection Are Two Important Factors That Make for Long Life in Gasoline Engine Construction

By S. GORDON HYDE, Advertising Manager Buda Company, Harvey, Ill.

THE average dealer has a very vague conception of the work involved in manufacturing a modern truck power plant. Space does not permit a detailed description of the various machinery processes which are necessary in building a gasoline engine. However, of all the multitudinous operations which are important, there is perhaps no more interesting work connected with the manufacture of an internal combustion engine than is the grinding and inspection operations upon which depends, to a great extent, the service and power which the engine is called upon to give in its daily grind.

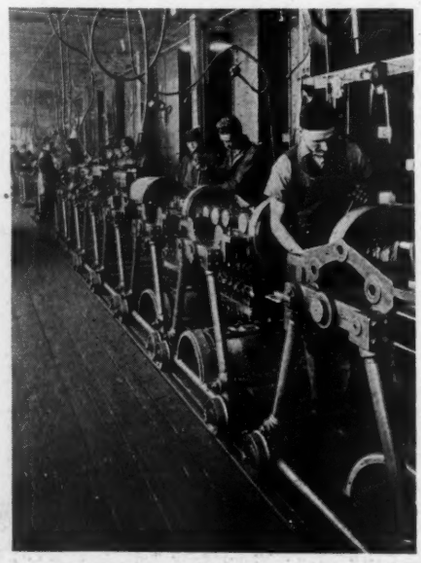
In the Buda Company's plant at Harvey, Ill., the grinding of the various parts which enter into the construction of the Buda engine is an exacting science and is accomplished by various machines, many of which are special and have been designed for a particular class of work. Perhaps it will be well to state at the outset that the Norton grinding wheel machine, and methods, make up a large part of the equipment used in the Buda plant.

The cylinder is, undoubtedly, the fundamental part of the engne and on the proper grinding of which lies the efficiency of the larger mechanical structure. The cylinders are ground on Heald Cylinder Grinders equipped with Crystolon wheels 24-J, 3½ in. x ¾ in. x 1¼ in. The cylinders come from the boring department with from .008 in. to .012 in. stock left on the diameter to be ground. The limits are plus or minus .001 in. Each machine completes twelve castings in an eight-hour day, a total of 48 cylinders.

But the cylinder is not the only part which requires extreme accuracy. The piston, which is a part of each cylinder, must of necessity be ground to fit within very small limits. The piston, after coming from the lathe on which it is rough turned about .030 in. over size, is then ground down to within the limits of plus or minus .0005 in. by a Norton grinding machine employing Alundum wheels 24 combination L, 18 in. x 2½ in. x 5 in. One machine handles about 100 pistons in an eight-hour day. In setting up the pistons, one end is centered and a cap having a center hole, is fitted over the open end of the piston, the cap being held in by a dummy wrist pin which goes through the piston and the shank of the cap, thus enabling the pistons to be ground on center.

Bushings Accurately Ground

The upper connecting rod bushing, which is of cast bronze, is bored, reamed, and faced on one end in a screw machine, but no turning or finishing is done on the outside diameter. The bushings are placed on a lathe arbor and are ground down to 1.314 in. with a grinding limit of plus or minus .0005 in. These bushings are a press fit in the connecting rods. Formerly these bushings were rough turned to within .015 in. or .020 in. of size on the screw machine, but now they are ground directly to size from the rough, thereby effecting a great saving in time.



One of the Assembly Lines
The progressive method of assembly is employed. The engines are run from the end of this line into the test room

From 1/32 in. to 3/16 in. of stock is removed in grinding and production is 600 in eight hours.

Grinding the crankshaft bearings is an important operation. Two grinding operators are used for roughing and finishing. On the roughing operation, .060 in. of stock is removed from the center bearing and .045 in. is removed from the rear and front bearing, leaving .005 in. to .008 in. of stock for finishing. The wheels used on these operations are originally 26 in. in diameter and are employed for grinding the crankpins. When they have worn down to 22 in. in diameter, they are sent over to the bearing grinding machines where they are finished out.

After the crankshafts are ground, a scleroscopic reading is taken which must show a point between 41 and 45. Any crankshaft which varies more than .001 in. in concentricity is rejected. Much attention is given to the grinding of these crankshafts, and at the same time a very good production is maintained. Roughing is accomplished at the rate of 55 per eight-hour day per machine, and about 58 are turned out in the finishing operation in the same time.

The grinding of the crankshaft pins is done on four machines—two for roughing and two for finishing. A 6636-O Alundum wheel is used for both operations. In the roughing .090 in. of stock is removed, leaving about .010 in. to .015 in. stock to finish. The finish grinding is done to a limit of plus or minus .001 in. and the production is 60 a day per machine (eight hours), for each operation.

A Norton grinding machine, equipped with an Alundum 24 combination wheel, 20 in. x 2 in. x 12½ in., is used for grinding push rod heads. The push rods are held in a collect which has a stop inside, the push rod projecting 2 in. from the base of the collect. The wheel is 1150 r. p. m., that of the fixture is 200 r. p. m. Production is from 850 to 900 a day, the finish is very high, and the surface must be exactly at right angles to the axis of the push rod. The push rods are electric

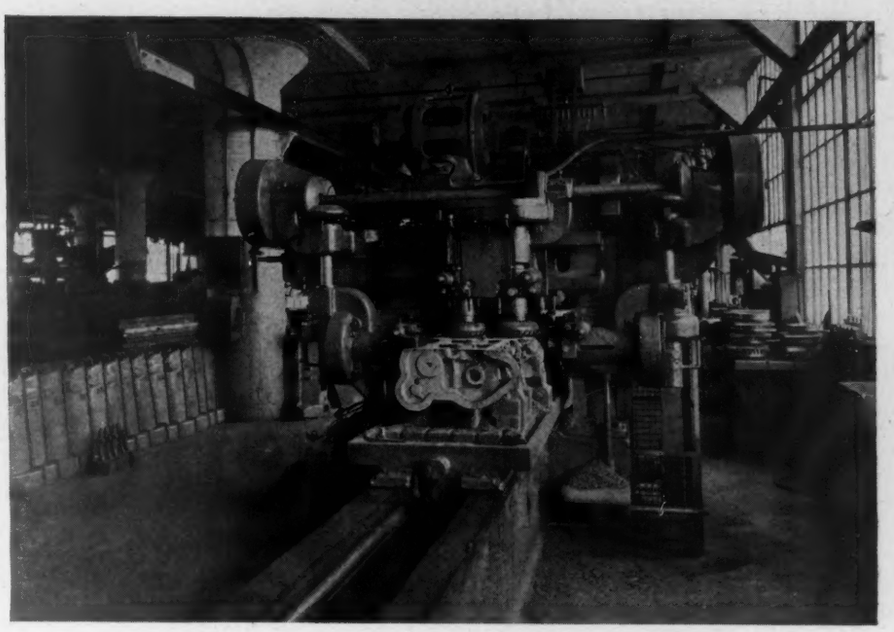
furnace steel, bone hardened 1/16 in. deep, and a scleroscope reading taken after grinding must show 70 and preferably 80.

Grinding push rod shanks is a job of which the Buda Company is justly proud. Two grinding machines handled the work, one doing the roughing and the other the finishing. A 3/8 in.—24, tapped hole runs into the end of the push rod for a distance of 7/8 in. and there is a center hole at the other end.

After the rods are rough-ground, the operator places them on a chute where they slide to the second operator who takes the finishing out. On the roughing operation .030 in. of stock is removed, leaving .005 in. for the finisher. The limits are plus or minus .0005 in. and the production is 900 in an eight-hour day, roughed and finished.

The grinding of camshafts calls for rather large equipment. Six Norton grinding machines are employed, three for roughing and three for finishing and seven different types of cams are ground. On the roughing machine 43 camshafts are ground to a wheel. The total roughing production is 35 per machine for an eight-hour day. There are eight cams, one eccentric on every shaft, and some cams have 5/16 in. of stock to be removed. From .020 in. to .025 in. of stock is left for finishing. On the finishing operation, the cams are held to plus or minus .001 in. and the production is 45 shafts per machine a day.

Thus practically every part of the Buda engine is ground thus insuring nicety of fit which can only be accomplished by modern grinding machinery. Regardless however of the care exercised by the operators of the grinding machines every part before it enters the assembly, is first checked accurately.



An Example of Large Machinery Used in Engine Construction

Crankcases and engine blocks are milled off on these monster machines. Three sides of the crankcase are here being milled at one time

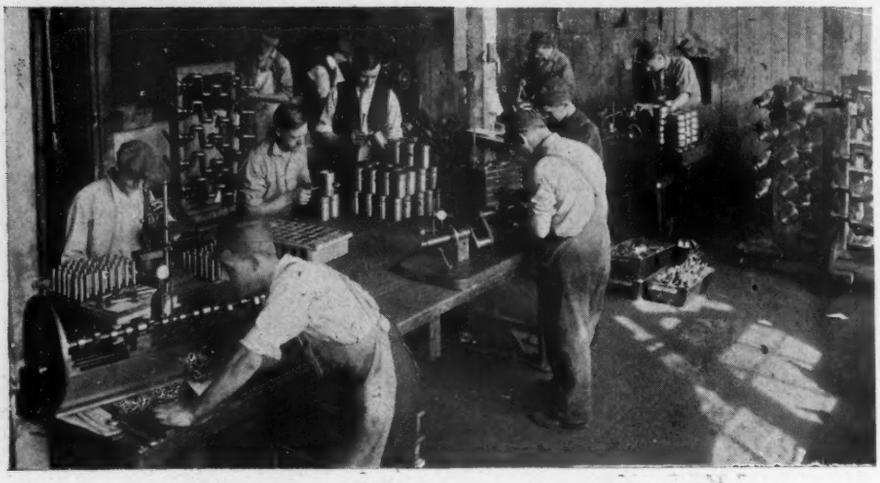
Testing the Buda Engine

Before touching on this subject it may be well to state that the engine division has an output of one hundred and twenty-five engines a day. All heavy-duty engines and not to be compared to smaller and lighter engines used in passenger cars.

The engines are manufactured with unusual care and precision from the first pouring of the metal to the final assembly. Every part is carefully tested for weight, hardness and accuracy of finish. Alloy metals are used in many places. The crankshafts and camshafts are of special open hearth steel, the connecting rods are forged from chrome vanadium steel, the connecting-rod bolts are nickel steel and four are used to each rod.

View of the Engine Testing Room

Approximately 600 hp. is generated in this room at any one time. This power is returned to the company's electric lines and equals approximately one-half of its requirements



Final Inspection and Testing of Camshafts, Crankshafts, Etc.
Here also such parts as valves and push rods, pistons, wrist pins and other small parts are thoroughly tested after grinding

As approximately 99 per cent of scored piston walls are the result of the piston pin or "wrist pin" slipping, unusual measures have been taken to prevent this occurrence. The piston pin is locked in by an alloy steel lock screw of two diameters extending through both sides of the piston pin giving double shear and preventing improper fit of piston pin at any time. A spring retainer ring which expands in grooves turned in each end of piston bosses also keeps the piston pin from slipping.

The engines are given a most thorough test. They are run in for from two to eight hours on the dynamometer and then run under their own power for from two to eight hours, after which they are torn down, regardless of how well they perform on the test block, and every part and bearing surface is carefully inspected and valves seated. After passing this test they are reassembled and again placed upon the test block for a final test, which every engine must undergo no matter how well it performed upon the previous tests, before it is ready for shipment. This final test consists of a run, under the engine's own power, of two to three hours or until the engine meets all power specifications.

Test Room Horsepower Not Wasted

The total average horsepower generated at any one time in the test room is approximately 600, or expressed in kilowatt hours averages 4,160 per day. This power is generated while the engines are running under their own power and is returned to our own electric lines equalling approximately one-half of our requirements. If all test blocks had engines running under their own power at one time, they would generate a total of approximately 3,500 horsepower. A total of 11,000 kilowatts is required for the entire plant running the huge milling machines, grinders, air generators, and numerous electric cranes. The test room more than equalizes itself in electric power used and electric power generated.

The Buda Company was organized in 1881 and was then known as the Buda Iron Works, at Buda, Illinois, employing about fifty men and engaged in the manufacture of railway appliances and material such as railway, hand and push cars and patented steel wheels for these cars; also switch stands, baggage and warehouse trucks, railway castings and forgings, and architectural iron work.

During the later part of 1890 and '91 the company moved to Harvey, Ill., and became known as the Buda Foundry & Manufacturing Co., later purchasing the Paige Iron Works (1895) and erecting a large shop for turning out frogs, crossings and switches and all types of special track for both steam and electric railroads. In 1906 additional ground was secured adjacent to the plant and a large machine shop erected for the manufacture of jacks for all railroad purposes.

The next year (1907) additional buildings were secured and the company began manufacturing railroad gasoline motor cars, which were powered by a two-cylinder, opposed, air-cooled engine. In perfecting this engine the company became interested in the automotive industry and started the manufacture of the "Buda transmission" which was soon followed by building special automotive engines and in 1908 started building transmissions and gasoline engines for the Hudson Company, which were used in their first model, the "Original Hudson '20'," as it was known at that time. In 1910 it was decided to wind up the transmission business and to concentrate upon the perfection and improvement of gasoline engines for automotive purposes. The firm then became known as the Buda Company.

In 1913 it was decided to discontinue the baggage and warehouse trucks and to substitute the Buda electric truck and tractor for warehouse and industrial use. Also during this year the Buda-Ross headlight generator for steam locomotives was brought out, giving the Buda Company a most complete line of railroad appliances and equipment as well as electric industrial trucks and automotive engines.

A large modern four-story structure of reinforced concrete and brick was completed in 1918 and it now houses the huge milling and grinding machines for finishing off crankcases and cylinder blocks as well as the many drilling, reaming and boring operations necessary in producing a heavy-duty automotive engine.

In normal times The Buda Company employs approximately 2400 men in the entire plant, about 1500 being engaged in the engine division alone, the other 900 being engaged in the other divisions.

The plant covers about twenty-five acres of ground and has a combined foundry capacity of 100 tons of poured metal a day.

The Buda Company has been under the same management since 1904, L. M. Viles, president, and F. E. Place, vice-president and general manager, having been connected with the firm for over 16 years. The personnel includes besides these men: Wm. P. Hunt, Jr., secretary and railroad sales manager; H. M. Sloan, treasurer; R. B. Fisher, general sales manager; S. Gordon Hyde, advertising manager; John P. Mahoney, sales manager; R. J. Broege, chief engineer, and E. D. Conant, general superintendent.

Grinding the Bearings of a Crankshaft
Crankshaft grinding is one of the important grinding operations. The life of the engine bearing depends on the accuracy of the crankshaft

Better Transportation
—The Nation's Vital Need

With rail facilities taxed to the breaking point, our biggest problem today is to relieve this strain and help transportation keep pace with industry and agriculture. Unquestionably the solution is the motor truck. Its worth has already been established, and the necessity for its use on a larger scale is becoming more and more apparent every day.

Ross Steering Gears have played an important part in making the motor truck a more efficient and reliable means of transportation. The easy steering, safety and reliability, which are guaranteed by the exclusive screw and nut design, have made Ross Steering Gears standard equipment on 418 different motor truck models from 165 different manufacturers.

Write for any further information desired

ROSS GEAR & TOOL COMPANY
760 Heath Street, Lafayette, Ind., U. S. A.

ROSS STEERING GEARS

THE STEERING GEARS THAT PREDOMINATE ON MOTOR TRUCKS

The United States Should be a Member of the Permanent International Association of Road Congresses

By ARTHUR H. BLANCHARD
Professor of Highway Engineering and Highway Transport, University of Michigan, Ann Arbor, Michigan

THE First International Road Congress was held in Paris in 1908. At this Congress, the Permanent International Association of Road Congresses was formed with headquarters in Paris. The Second Congress was held in Brussels in 1910.

The Third International Road Congress was held in London in 1913, at which time there were 3,793 members of the Association. The business sessions of the Congress occupied about one week and were devoted to a thorough discussion of the subject matter of 123 reports pertaining to the 19 topics on the program of the Congress.

The Government of the United States was the only world power which was not a member of the Association when the Third Congress was held. The records of the Third Congress indicate that the following important countries were members of the Association: Austria, Belgium, France, Germany, Great Britain, Italy, Japan, Norway, Portugal, Russia, Spain, Sweden, and Switzerland. Of the smaller countries, it is interesting to note that our neighbors, Cuba and Mexico, sent Government delegates to the London Congress and are Government Members of the Association.

The International Commission of the Permanent International Association of Road Congresses, at its meeting held in Paris on June 21, 1920, unanimously voted to accept an invitation to hold the Fourth International Road Congress in the United States in 1922 provided an invitation from the United States Government is received by the Executive Committee of the Association before January 1, 1921. If an invitation is not received from the United States on or before December 31, 1920, the invitation from the Italian Government will be accepted. As a regulation of the Association stipulates that an International Congress cannot be held in a country whose Government is not a Permanent Member of the Association, it will be necessary for the United States Congress, during this or next month, to pass an appropriation which will provide for the annual subsidy of the United States as a Government Member of the Association and which will enable the Secretary of States to extend an official invitation to the Association to hold the Fourth International Road Congress in the United States in 1922.

The object of the Association is to promote progress in the improvement of highways and the efficiency of highway transport throughout the world. The work of the Association consists in organizing International Road Congresses, publishing reports, papers, proceedings and other documents and collecting information relative to highway improvement and highway transportation.

The membership of the Association consists of representatives of governments, delegates of corporations and individual or private members. The business affairs of the Association are managed by the Permanent International Commission, which is composed of members representing the various governments having membership in the Association. Each government has the right to one representative for each 1000 francs of its total annual subsidy, provided, however, that the number of representatives from any one government does not exceed fifteen.

Membership Dues

Individual or private members pay annual dues of 10 francs, or compound for a life subscription by the payment of one sum of 125 francs. Due to the current rate of foreign exchange, it is practicable for Americans to become Life Members by the payment of the subscription of 125 francs through the medium of a bank draft, which will cost, at the present time, between $9.50 and $10. Life membership dues should not be sent by an International Postal Money Order, as an order for 125 francs will cost approximately $25. Bank drafts should be made payable to the Permanent International Association of Road Congresses and be sent to Professor Paul LeGavrian, General Secretary, Permanent International Association of Road Congresses, 1 Avenue, d'Lena, Paris, France.

Individual members receive, free of charge, all of the publications of the Association, including papers, reports, and proceedings of Congresses, which in times of peace, are held triennially. The reports and proceedings of the Third International Road Congress, measure, when stacked, about 6½ inches by 9½ inches by 8 inches in height. The reports contain reliable information pertaining to the progress in highway development and highway transportation in all important countries and, hence, serve as an encyclopedia for foreign practice. Members also receive the Bulletin of the Association, each issue consisting of forty to fifty pages devoted to official notices, minutes of meetings of the International Commission and the Executive Committee, and reviews relative to highway improvement and highway transport in different countries. All the literature, sent to American members, is printed in English.

The International Association should be supported by Americans, who wish to see the science and art of highway improvement and highway transport rapidly develop throughout the world, who believe in an international medium for the exchange of opinions and conclusions, and who wish to be well informed relative to progress in highway engineering and transportation in foreign countries. Americans should not be satisfied with joining the Association as individual members.

Although every courtesy was extended to the United States members of the Association at Paris, Brussels and London, nevertheless every American who has attended an International Road Congress has wished to apologize because his Government was not a Permanent Member of the Association. Considering the phenomenal development of highway improvement and highway transport in the United States, and the active part which the United States Government is taking in highway construction through the medium of the Federal-Aid Act, it requires no elaborate arguments to demonstrate the advisability of the United States Government becoming a permanent member of the Association.

The status of the United States as a leading world power demands that its annual subsidy should be the maximum allowed by the Constitution of the Association, that is, 15,000 francs, which will provide for fifteen representatives of the United States on the Permanent International Commission. It is the duty of every American, who wishes to support the work of the International Association and to have an International Road Congress held in the United States in 1922 to write to his representatives in Congress urging them to vote favorably on an appropriation to provide for the annual subsidy of the United States as a government member of the Permanent International Association of Road Congresses.

London to Have One Thousand Double Deckers

LONDON, ENGLAND.—This city is to receive 1000 of the large "K" type motor-omnibuses by spring, according to the London General Omnibus Co.

The worst of the mechanical and other difficulties which prevented or postponed the rapid removal of rolling stock during the war have been overcome and the substitution of the new buses for the old "B" type will proceed with rapidity. The "B" types will be withdrawn as the new type is introduced in order to prevent any traffic dislocation.

The "K" type represents a gain of about 50 per cent in carrying and seating capacity.

SIVYER CASTINGS

Among the makers who assure greater dependability and longer life of their products through the partial or exclusive use of Sivyer Electric Steel Castings are:

Rear-spring seat and radius rod bracket of Sivyer Steel

Tractors

J. I. Case T. M. Company
Dart Truck & Tractor Corporation
Electric Wheel Company
General Ordnance Company
Holt Manufacturing Company
Huber Manufacturing Company
Illinois Tractor Company
International Harvester Company
Keck Gonnerman Company
John Lauson Manufacturing Company
Minneapolis Threshing Machine Co.
Peoria Tractor Corporation
Port Huron Eng. & Threshing Co.
Samson Tractor Company
Turner Manufacturing Company
H. A. Wetmore

Trucks and Automobiles

Dart Truck & Tractor Corporation
Diamond "T" Motor Car Company
Federal Motor Truck Company
Forschler Motor Truck Mfg. Co.
Menominee Motor Truck Company
Nash Motors Company
National Motor Car and Vehicle Corp.
Parker Motor Truck Company
Reo Motor Car Company
Service Motor Truck Company
Sterling Motor Truck Company
Velie Motors Corporation

Engine, Parts and Implement Manufacturers

B. F. Avery & Sons
Deere & Company
Falls Motor Company
Foote Bros. Gear & Machinery Co.
Grand Detour Plow Company
Jaxon Steel Products Co.
Midwest Engine Company
R. D. Nuttall Company
Wisconsin Motor Manufacturing Co.

Making Light Sections Unfailingly Sound

ON the castings shown on this page, the heavy bosses and light wall sections used to cause cracks and shrink-holes, bringing about costly rejections during and after machining. When we were asked to devise a remedy we provided new methods of heading and gating that eliminated those defects. Not only do these Sivyer Castings cut rejections and machining costs, but the thorough Sivyer annealing and the crystallization-resisting properties of Sivyer Electric Steel provide castings certain to be unaffected during the life of the truck by the incessant shocks and jars that too often crystallize and break ordinary chassis castings.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Taken From Current House Organs

Protect the Cooling System

It is getting about the time of year when a few hours sometimes makes a big difference in temperature. The weather, comparatively mild at eight o'clock in the evening, may reach the freezing point by morning.

This means—look out for frozen radiators, with all accompanying dangers!

One of the most serious results of a badly frozen radiator is a cracked motor block, which means a big replacement expense and the truck out of commission for some time. Broken cores, damaged water pumps and annoying leaks, which are extremely difficult to locate and repair, are other things which may be expected. A little attention to the proper protection of the cooling system is, therefore, well worth while.

Observance of the following directions will eliminate the danger of frozen radiators:

For temperature not lower than fifteen degrees above zero—one part alcohol, nine parts water.

For temperature not lower than zero—one part alcohol, three parts water.

For temperature not lower than twenty degrees below zero—four parts alcohol, six parts water.

Flush out radiator before putting in anti-freeze mixture.

If alcohol is not immediately obtainable and weather conditions are dangerous, drain radiator when truck must stand idle for any length of time.

It is also well in severe weather to cover half the radiator front with pasteboard, which serves as a protection from the cold and by enabling the engine to warm up quickly, assures greater gasoline economy.—Transport Headlight, Transport Truck Co., Mount Pleasant, Mich.

Take Your Car on Broadway

For thirty-five years Patrick O'Connor served in the dual capacity of driver and conductor on one of the quaint little horse cars that lingered on one of the cross streets of lower New York long after electricity had superseded both horses and cable on the main lines. Pat's route was on Chambers Street, where traffic was never heavy and for many years his daily receipts never varied more than a few nickels above or below three dollars.

One day Pat was retired on a pension and a green man, Ike Levinsky by name, was given the same old horse car and the same old run.

The first day Levinsky's receipts were $3.25.

The second day he turned in $6.85.

The third day receipts totaled $14.90 and the fourth day, $19.20.

The superintendent had been watching the daily report sheet with growing amazement.

"For the luvva Mike," he exclaimed when he saw the $19.20 figure, "send Levinsky here."

With a sheepish grin, standing first on one foot and then on the other, Levinsky appeared before him. "Where did you get all this money, Levinsky?" he asked.

"Vull, Ol tell ya," said Levinsky. "On de Chembers strit few mens rides," he explained apologetically, "ven busnitz iss badt I dakes mine gar on de Brodevay."

Levinsky had the right idea. If he remained in the street car business he probably owns a line of his own.

The way to get business is to go after it. It won't come to you. You may say that a garage is not as easy to move as a street car. Don't you believe it! You can move your place of business all over the map until every man, woman and child knows you, and your service sees them right in their homes, at their offices, and at the movies.

There is no secret of success in modern business—unless it may be advertising and then it can't very well be called a secret because it's a widely known and acknowledged fact. But you must remember that real advertising means much more than an occasional formal notice in the newspapers.

It means live, interesting copy frequently changed. It means attractive lantern slides at the movies, circularizing your prospects and, if possible, attractive window displays.

Some auto accessories are bought, more are sold, and the man whose business is increasing is usually the man who is **selling** his goods. He "takes his car over on Broadway."—The Silver Edge, Raybestos Co., Bridgeport, Conn.

Judicious Reasoning

There have been recently a great many rumors in regard to various concerns prominent in the automobile industry.

Gossip is spreading reports that this and that concern is failing, that the automobile industry itself is crumbling.

Such thoughts are foolish. A few—very few—concerns have difficulties. Some may even disappear from the horizon.

But the automobile industry is safe—it has proved itself one of the greatest lines of business yet developed—and it will go on to greater things.

The motor car has become an integral part of American life. It is no longer a luxury. It cannot be considered today as something "special."

And so we should do no worrying about this industry which is built on such a solid foundation. Let's just keep on plugging away, and forget the other fellows who are being battered around by gossip.

Nothing can daunt the automobile industry itself; and nothing will destroy those concerns which deserve to survive. —Hassler Hits, Robert H. Hassler, Inc., Indianapolis, Ind.

To Guarantee Spark Plugs

The Splitdorf Electrical Co., 98 Warren St., Newark, N. J., will hereafter fully guarantee each Green Jacket spark plug made by them.

Eighty-Horsepower Daimler Tractor Developed During the Last Days of the War for Hauling Artillery, But is Now Being Sold for Purposes of Peace

It is particularly adapted for hauling trailers in rough country as is found around lumber camps and may also be used for farm work. It is of exceptional interest because it represents the latest German tractor development and possesses many notable features. The large, cleated wheels are interesting. As a tractor it is particularly powerful because of the four-wheel drive. The engine is a standard four-cylinder design, the clutch is a double-cone with the clutch spring between. The eight-speed transmission is the usual four-speed type with an extra countershaft which gives double the usual reduction. The oiling system is very complete, oil leads running from the engine to the bevel gear drive and to all four wheels. The wheels are driven by a spur pinion and internal-gear much like that used on many American trucks. The large triangular piece seen on the side of the tractor just in front of the driver's compartment is a huge chock block for placing behind the rear wheels, one on each side, when the tractor is mired.

Metal and Rubber Markets

Steel Rapidly Approaching Normal

Numerous indications signify a decided return to normal by the steel industry, not alone in operations and shipments of products, but in the price market. Developments toward this normal movement are occurring with astounding rapidity. Freight handling has returned to a degree of pre-war efficiency and with the mills' demand for materials satisfied frantic buying activities are subsiding.

Steel Products Prices

Pig Iron—Pittsburgh—			
Bessemer billets	55 00	a	.....
Open hearth	55 00	a	.....
Forging billets	65 00	a	.....
Sheet bars	60 00	a	65 00

Sheets

The following prices are for 100-bundle lots and over f.o.b. mill:

Blue Annealed Sheets—			
Pittsburgh (base)	4 90	a	5 00
Philadelphia	5 25	a	5 35
Chicago	5 28	a	5 38
Galvanized Sheets of Black Sheet Gauge—			
Pittsburgh	7 75	a	8 00
Chicago	8 13	a	8 38
Tin—Mill Black Plate—			
Pittsburgh	6 50	a	7 00

Tin Plate

Tin plate, per base box	7 00	a	8 00
Terne plate, I. C.	7 05	a	8 25
8-lb. coating, per package	6 90	a	8 10

Structural Material

Structural shapes, Pittsburgh.	2 90	a	3 00
Structural shapes, Philadelphia	3 25	a	3 35
Structural shapes, New York..	3 28	a	3 38

Fininshed Iron and Steel

Steel hoops and bands	5 00	a	5 25
Tank plates, Pittsburgh	2 85	a	3 00
Tank plates, New York	3 23	a	3 38
Steel bars, New York	3 38	a	3 63
Steel bars, Pittsburgh	3 00	a	3 25
Rails—Standard Bessemer sections, mill	55 00	a	60 00
Standard, open hearth, mill	57 00	a	62 00
Light sections—25 and 45 lbs..	3 25	a	3 50

Iron and Steel at Pittsburgh

Bessemer iron	48 96	a	.....
Bessemer steel, f.o.b. Pittsb'gh	55 00	a	.....
Skelp, grooved steel	3 25	a	4 00
Skelp, sheared steel	3 45	a	4 00
Ferromanganese (20 per cent.)	165 00	a	170 00
Steel, melting scrap	27 00	a	.....
Steel bars	3 00	a	3 25
Wire rods	70 00	a	75 00
Iron bars	4 00	a	4 50
Plain wire	4 00	a	....
Plain wire, galvanized	4 25	a	4 70
Cut nails	6 25	a	6 75
Wire nails, Pittsburgh	4 25	a	4 50
Steel hoops	5 00	a	5 25

OTHER METAL PRODUCTS—Following are the prices current for brass and bronze products:

Copper Sheets, not rolled	25 50	a	.....
Copper bottoms	34 00	a	.....
Seamless tubing, bronze	30 50	a	32 00
Seamless tubing, copper	28 00	a	.....
Copper rods	22 75	a	23 50
Copper wire	17 50	a	18 00
Cut lead sheets	10 75	a	.....
High brass wire	23 25	a	.....
High brass sheets	22 25	a	.....
High brass rods	20 25	a	.....
Low brass sheets	24 00	a	.....
Low brass wire	25 00	a	.....
Low brass rods	25 00	a	.....
Nickel silver, 18 per cent.	36 50	a	.....
Brazed tubing, brass	36 00	a	.....
Brazed tubing, bronze	40 75	a	.....
Brazed tubing, copper	40 75	a	.....
Seamless high brass tubing	27 00	a	.....
Seamless low brass tubing	29 00	a	.....
Sheet zinc	12 50	a	.....

Miscellaneous Metals.

ANTIMONY—Conditions are not as promising as expected heretofore and weakness has set in along sentiment in other metals. Prices have been sunk to 6⅜c a unit, and it is reported even the low level could be shaded if business was offered. London also remains quiet with quotation unchanged at £52.

GRAPHITE — Market exceedingly weak. Largest consumers holding off and ordering only for immediate needs. The less carload buyers are also cutting down to some extent, but ordering as usual. Prices remain as follows: Crude Mexican ore, $35.80 per ton New York; Korean, 3c per pound; Madagascar, 6c per pound; Ceylon, 3½c to 14c per lb.

MANGANESE—The market is improved with quite some business at 55c for Indian ore, a figure that could not be approached within 10 per cent. a week ago. Little Brazilian manganese is offered here, as Europe has been buying in Rio, contracts being closed at 42½c f. o. b. Rio, equivalent to at least 60c New York.

TUNGSTEN—Prices are nominal at $4.50 for Chinese and $5 to $5.50 for Bolivian, as the trade is very dull. Europe is inquiring here now, but direct shipments from countries of origin are cheaper than American. No improvement in domestic demand is looked for until the steel and automotive trades show more activity.

OLD METALS — The entire scrap metal market is quiet and sellers continue offering concessions without interesting consumers, who remain out of the market for lower prices in the virgin metals. On the other hand, dealers are not forcing sales at present quotations, expecting higher levels. Small dealers are freely offering 13c for No. 1 machinery composition and crucible, but find no sellers. Holders demand 13½c to 14c. Block tin scrap and pewter dishes are reduced to 38c and 30c, respectively, but are reported scarce and active. Prices follow:

Aluminum—	Buying.	Selling.
Cast scrap	18 a18½	19 a19½
Sheet scrap	17 a17½	18½a19
Clippings	19½a21	22 a23½
Copper—		
Heavy machinery comp.	11½a12	12½a13
Heavy and wire	11 a11½	12¼a12½
Light and bottoms	9¾a10	10½a11
Heavy, cut and crucible.	12 a12¼	13 a13½
Brass, heavy	6½a 6¾	7¼a 7½
Brass, casting	7½a 8	8¼a 9
Brass, light	5¾a 6	6½a 6¾
No. 1 clean brass turngs.	6 a 6½	7 a 7¼
No. 1 comp. turnings	10 a10½	10¾a11¼
Tea lead	4 a 4¼	5 a 5¼
Lead, heavy	5¼a 5½	6 a 6¼
Zinc scrap	4 a 4⅛	5 a 5⅛
Solder joints	8¾a 9	9½a10
New zinc clippings	5 a 5½	5¾a 6
Pewter dishes	26 a27	28½a30
Block tin, scrap	34 a35	37 a38

Crude Rubber Weak

The local market for crude rubber is very quiet. Denial of a reduction of prices by one of the leading tire companies was without visible effect, as no improvement is looked for in the tire situation before the spring. In the meantime demand from other directions is very light, and likely to continue so until the end of the year. The London market was weak in both spot and future positions, despite the announcement of the probable settlement of the coal strike.

Para—Up-river, fine	23¾a	..	
Up-river, coarse	15½a	..	
Island, fine	20 a	..	
Island, coarse	14½a	..	
Caucho ball, upper	15½a	..	
Caucho ball, lower	11½a	..	
Cameta	14 a	..	
Plantation—First latex, crepe	23½a	..	
Brown crepe, thin, clean	19 a	..	
Rolled, brown crepe	16 a	..	
Smoked, ribbed sheets	21 a	..	
Centrals—Corinto	19 a	..	
Esmeralda	19 a	..	
Guayule, wet	24 a	25	
Balata, black, Ciudad	*72 a	..	
Balata, block, Panama	*50 a	51	
Balata, sheet	*1 00 a	..	
Mexican—Scrap	*22 a	..	

*Nominal.

SCRAP RUBBER—Very little interest is manifested in the market and prices at best are nominal.

Boots and shoes	5 a	6½	
Arctics, trimmed	4 a	..	
Arctics, untrimmed	3 a	..	
Tires, automobile	2 a	..	
Bicycles, pneumatic	1½a	..	
Hose, steam, fire	.. a	1¼	
Inner tubes, No. 1	.. a	9	
Inner tubes, No. 2	.. a	6	

Rubber Association Sees Bright Clouds Ahead

The regular monthly meeting of the Mid-West Rubber Manufacturers' Association was held at the Chicago Athletic Association on Tuesday October 19, the meeting having been postponed one week on account of the regular meeting date falling on Columbus Day. Forty members were in attendance, and after the meeting interesting remarks were made by a number of those present.

A note of optimism was evidenced in what nearly all of the speakers said, the apparent feeling being that business in the tire industry was already on a firmer basis and that demand was increasing among the dealers.

President John T. Christie read the brief which he had prepared and filed with the Federal Trade Commission in opposition to the continuance of the practice of guaranteeing tire prices against a decline. This was listened to with great interest and appeared to meet the hearty approval of all present.

What Are the Fundamental Requisites of a Successful Truck Dealer?

By A. E. SAMELS, Assistant Manager Four Wheel Drive Auto Co., Clintonville, Wisconsin

TO answer this question it is, of course, necessary to determine what comprises a dealer's obligation to his customers, to his prospects, and to the manufacturer whose product he is selling. Upon the manner in which he measures up to the requirements necessary in carrying on this business depends to a very great extent his success or failure as a truck distributor.

The Four Wheel Drive Auto Company has a well-defined definition of the factors that make for a successful distributor of its product. There are certain fundamental requirements that every truck dealer should be familiar with in order to lay the ground work for a permanent and prosperous business. Our definition of a FWD dealer embraces the following points: He is one, "Who has engaged permanently in the sale of FWD trucks; who carries at all times an adequate stock of FWD parts; who understands the application of FWD trucks and knows the proper equipment to be recommended; who supplies owners with reliable mechanical knowledge and skill in the operation and repair of FWD trucks."

This definition has been put out on a handsomely printed placard and sent by the company to every one of its dealers and distributors to be hung in their display rooms as a constant reminder of the factors that will help them establish a business of quality in their community.

It might just as well read, "A successful dealer is one who, etc.," for while the definition refers specifically to an FWD dealer it is applicable to virtually every distributor of motor trucks. The points brought out in the definition are ones that deserve careful consideration. An analysis of these rules would indicate that they are a foundation upon which any truck distributor can build up a permanent and successful business that would prove profitable to himself and to the company he represents.

Permanence is Given First Consideration

The motor truck is on the market to stay; there is no doubt about that. Selling trucks is a permanent business. Therefore, the dealer who establishes his business as a permanent institution in a community is the man who will come out ahead. By locating permanently as the representative of a quality product he makes a strong appeal to the quality buyer who is invariably an established institution or individual in the community, and who will only deal with established concerns. The quality buyer is usually looking for a quality product, handled by a quality dealer—one who has a well-established place of business, regular business hours, and who practices straightforward business methods. This dealer permanency is further insured by the co-operation that is given to the dealer from the very start. Representatives from the sales department are on the job with him giving every possible aid along lines that will help him put his business on a permanent basis in his community.

A prospective truck buyer knows, that no matter how good a truck is it will eventually require spare parts and repair work. The dealer who has an established place of business and a standing in the community will enjoy more sales through the knowledge of his prospects that he has behind him years of faithful service. Permanency not only places a dealer in a position to deal most advantageously with the home company, but wins him the favorable consideration of the banking interest with which he does business.

Carrying an Adequate Supply of Spare Parts

The second point brought out in the definition of an FWD dealer says that he is "One who carries at all times an adequate stock of FWD parts." Until indestructible material of limitless strength shall be invented certain parts of a motor truck will wear out.

The maintenance of a stock of parts is necessary to give proper service. Truck owners, like other people, will not patronize the man whose goods are never in stock but are always "Coming in a few days." By maintaining a stock of parts, the dealer is in a position at all times to gain the good will of owners of his product, as well as reap available profit. Although the investment in spare parts is left to the discretion of the dealer to a very great extent, we estimate that for each truck the dealer has sold in his territory he carries a minimum of $125 worth of parts.

Paragraph three of our creed provides that a **dealer shall understand the application** and **know the proper equipment** to be recommended with his product. This is an important feature of a successful dealership. When a dealer thoroughly understands the adaptability and limitations of his product and **knows the proper equipment to recommend for certain jobs** he has accomplished much in the direction of a satisfied customer. Many dealers in their overanxiousness to make a sale entirely overlook the restrictions which the natural limitations of material place on the truck. Warnings and implorations of the manufacturer are often ignored. Trucks are sold to carry more than their rated capacity. Everything about the truck is "oversold" to the prospect, who in good faith loads it with tasks under which it cannot stand the strain. The result is a dissatisfied owner and grief for the dealer. Thorough knowledge of the adaptations of the truck and a knowledge of the proper equipment for the work to be done, therefore, are two points on which a dealer should be thoroughly informed.

The final paragraph of the creed specifies that a dealer shall be able to supply to owners of his trucks, reliable mechanical knowledge and skill in the operation and repair of the trucks.

The man who buys a truck does so because he hopes to make money by its use. He can only make money while the truck is in operation. He has a right to expect and to look to the dealer to furnish the mechanical knowledge and skill which shall keep his truck in continuous operation and in the best possible condition at all times.

In order to be able to furnish this knowledge and skill in repair and necessary instruction to customers there must be preparation on the part of the dealer. He must make a study of his product and its operation requirements as well as of his customers' needs.

In this connection it is interesting to note the plan of the Four Wheel Drive Auto Company in co-operating with the dealer in this respect. The company conducts a school of instruction, to which everyone of its dealers is required to send a service man to complete a course on the operation and care of FWD trucks. This course embraces not only a study of the theory of construction, but embraces actual work on the various units under the direction of the instructor for a period of three weeks.

The truck distributor is an important arm of the whole truck industry. It is the dealer who has a permanent interest in the truck industry, who carries an adequate stock of parts for the benefit of his owners, who understands the application of his product and the proper equipment to recommend with it and who provides his customers with reliable mechanical knowledge and skill that will play an important part in the future growth of the entire industry.

Ordinance Protects Overloading

Public weighing stations in St. Louis are being used in the enforcement of the new ordinance regulating the weight of load carried in motor trucks and other vehicles, which went into effect in St. Louis July 3. The ordinance forbids the operation, without special permits, of vehicles which with their loads weigh more than 28,000 lb., or which carry on either axle a greater weight than 800 lb. per inch of effective tire bearing. When a question of weight arises police or public officials may demand that the vehicle be taken to a station for checking the weight.

Time for Local Associations to Get Busy

HOW to maintain efficient local, state and national associations, is one of the greatest problems confronting the dealers in motor vehicles. It is difficult to organize a local association and equally difficult to maintain the interest week after week and year after year. Languishing local associations breed weak and inefficient state associations, and the national association can never be invigorated unless there is the substantial backing of the state and local bodies.

Every city, small and large, should have its associations and there should be regular meetings, at which subjects vitally affecting the industry should be thoroughly discussed. These regular meetings and discussions are vital in eliminating cut-throat competition and underhanded business methods if the dealers will co-operate. It is true that in most associations a few dealers have to do most of the work in connection with the association and must bear the criticism of those who stay away from the meetings and assert that the pushers are trying to "run things." This is an unfortunate situation that must be handled with tact and diplomacy. It is important that an effort be made to induce every dealer in trucks, passenger cars and accessories, to join the association and regard the organization as vital to his welfare and its meetings of first importance. The various types of vehicles and supplies, interlock to such an extent that it is advisable to admit to membership the dealers and manufacturers of every line. Meetings should be held at least once a month. Make the meetings interesting.

It is important to maintain a live secretary who will make it his business to notify every member personally of the meeting and do everything in his power to persuade him to attend.

The secretary should also be on the lookout for new members, get after those careless about attending and be on the alert at all times to keep the association alive and efficient. It should be the business of the secretary to arrange a series of talks by out-of-town dealers, factory representatives and experts from the various motor vehicle and accessory line, who might be in the city and who can be induced to tell of trade conditions elsewhere, how problems are solved in other places, and relate other information which may be instructive and interesting. These travelers are usually glad of an opportunity to meet the local dealers and interchange views and experiences. No one need expect oratorical effort. There is no demand for a Billy Bryan or Daniel Webster exploitation. These chance visitors move over the territory irregularly and it is not always possible to count upon their coming upon a certain date. It is perhaps best to call special meetings when they are available. Such can thus be secured without any expense to the association.

Every dealer should constitute himself a committee of one to watch out for these territorial men and notify the secretary when they are coming and whether they will consent to speak before the association.

There is always something that can be discussed if out-of-town speakers are lacking. Road improvement, traffic laws, labor conditions, shows, truck parades, and various local, state or national problems, are always bobbing up and furnish material for a discussion of a few hours. A dinner preliminary to the meeting to be paid for out of the annual dues, is a good move and helps to attract members.

The presiding officer should be business-like and inject plenty of "pep" into the meetings and see that they do not become prosy. The secretary and president should co-operate to get out the members and then see that they are repaid by a successful meeting. Efforts should be made to stimulate organizations in neighboring cities. Dealers should be advised to perfect an organization and affiliate with the state and national bodies. Copies of by-laws and constitution should be loaned as a pattern. A little help in this direction will indirectly help the entire industry. In union there is strength. Lack of organization is a weakness of the motor vehicle industry that becomes more pronounced each year. There is no excuse for further delay in this direction. Each local association should stimulate the state organization. Find out why meetings are not held and, if dormant, bring about a revival. Most of the state organizations started with flying colors, but most of them have fallen by the wayside. Inefficiency of the local organizations has been passed on to the state and also affects the national.

—*E. E. PIERSON*

The Multipho Corporation, a photographic firm, has conceived the idea of a traveling "Photo" studio. The gallery has been mounted on an Oldsmobile truck and can thus be taken from town to town at the will of the operators.

Statement of the Ownership, Management, Circulation, Etc.

Required by Act of Congress of August 24, 1912

Of COMMERCIAL CAR JOURNAL published monthly at Philadelphia, Pa., for October 1, 1920.

State of Pennsylvania
County of Philadelphia, ss:

Before me, a Notary Public in and for the State and county aforesaid, personally appeared James Artman, who, having been duly sworn according to law, deposes and says that he is the Editor of the COMMERCIAL CAR JOURNAL, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication, for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

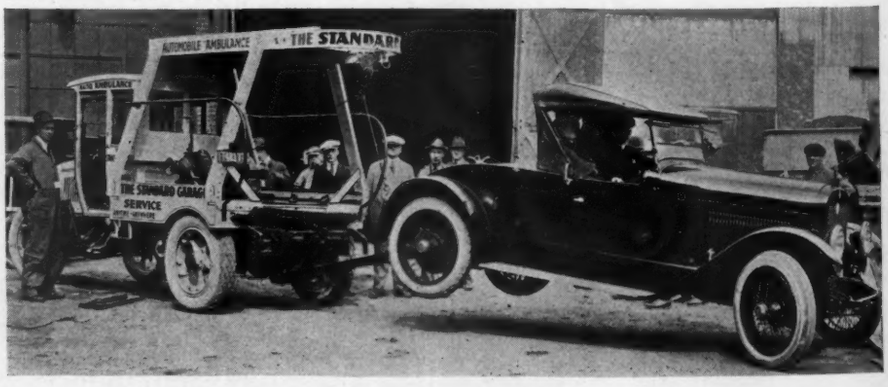
1. That the names and addresses of the publisher, editor, managing editor and business manager are:
   Publisher, CHILTON COMPANY, 49th & Market Sts., Philadelphia, Pa.
   Editor, James Artman, 4538 Chestnut St., Philadelphia, Pa.
   Managing Editor, Albert G. Metz, So. Ardmore, Pa.
   Business Manager, C. A. Musselman, 4203 Pine St., Philadelphia, Pa.
2. That the owners are:
   James Artman, 4538 Chestnut St., Philadelphia, Pa.
   George H. Buzby, Wellington Apartments, 19th & Walnut Sts., Philadelphia, Pa.
   C. A. Musselman, 4203 Pine St., Philadelphia, Pa.
   A. H. Vaux, Penllyn, Pa.
3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: None.
4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders, who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and that this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

JAMES ARTMAN, Editor.

Sworn and subscribed before me this 22nd day of September, 1920.

(Seal) GEORGE H. SHEVLIN.

(My commission expires April 1, 1921.)



Automobile Ambulance

The Standard Garage of Toledo, Ohio, is a pioneer in what bids fair to be an important factor in the automobile industry. This progressive "automobile hospital" has purchased a truck equipped by the Mansfield Steel Corp. with a Mead-Morrison motor truck winch and apparatus for handling wrecked or disabled automobiles. This 1½-ton Paige, with the aid of the Mead-Morrison winch and one man is able to lift automobiles weighing nearly 10,000 lb. Another important feature of the automobile ambulance is its ability to pick up a car from the rear without damaging fenders, tank or body. This has always been a problem for the garage man when a rear wheel or axle is broken or damaged. As an all-around aid to the handling of "injured" cars the auto ambulance has proved itself a practical success.

Factory News and Capital Increases

The Bóllstrom Motors, of St. Louis, Mich., manufacturing the Bollstrom four-wheel drive truck, is reported to be considering extensive expansion. This expansion will be accomplished by a large stock issue and a state-wide advertising campaign. The firm is headed by Maurice Bollstrom, president, originally of the Duplex Truck Co.

The General Motors Corp. has declared a dividend of $1.50 a share on the preferred stock, $1.50 per share on the 6 per cent. debenture stock, $1.75 on the 7 per cent debenture stock and 25 cents a share and 1/40th of one share of common stock without par value on the no par value common stock.

The Candler Radiator Co., of Detroit, Mich., has recently been installed in its newly built and modernly equipped factory building on Shoemaker road, Detroit.

The New Era Spring and Specialty Co., Grand Rapids, Mich., manufacturer of automobile bumpers, reports that it has turned out 80,000 bumpers during the past year. The new factory with its special machinery has produced 500 a day.

The Chevrolet Motor Car Co. will establish a service and assembing station on Gilbert Ave., Cincinnati, O. Property for the structure which will contain 18,000 sq. ft. of floor space has recently been acquired.

The Reo Motor Car Co., of Lansing, Mich., through the rearrangement of its production department and the addition of several buildings, expects to increase its output about 20 per cent.

The Mack-International Motor Truck Corp., the sales unit of the International Motor Co., has opened a factory branch for Mack trucks in Charlotte, N. C. The branch will be managed by T. T. Perry, formerly with the Ford Motor Co., Detroit.

The Fleet Body Corp., of Owosso, Mich., has been awarded the contract for the entire 1921 business of the General Motors Truck Company in truck bodies and cabs.

The Spacke Machine and Tool Co., of Indianapolis, Ind., is operating in the hands of Robert M. Feustal and Charles O. Roemler, receivers, following the petition for the appointment of a receiver filed by a number of the company's creditors. A committee of creditors has been appointed to effect an adjustment.

The American Axle Co. has become heavily interested in the Beaver Motor Truck Corp., Ltd., of Hamilton, Can., and in the future will supervise the operation of the Canadian factory. Plans are now under way to turn out 3000 trucks during the next twelve months.

The Pyrene Manufacturing Co., Inc., 17 East 49th St., New York City, has brought an action for infringement against the Fire Gun Co.

The Gill Manufacturing Co., 8301 S. Chicago Ave., Chicago, Ill., held a convention of officials, branch managers and representatives at the plant recently to formulate new plans and policies for the coming year. Reports showed an extensive sales increase since 1916.

Lyons Storage Battery Co., of Philadelphia, Pa., has increased its capital from $500,000 to $3,200,000.

The Akron Rubber Mold & Machine Co., Akron, O., is making extensions to its plant which will double its present output. The addition is made to meet the increasing demand for its mold equipment.

The Swartz Motor Truck Co. has awarded a contract for a new $40,000 factory at Oakbrook near Reading, Pa. The firm makes heavy trucks.

The Holley Carburetor Co., Detroit, Mich., has doubled its capacity by the addition of a one-story saw-toothed construction. This building will be given over to the production of the N-H carburetor.

Literature

"Motor Trucks of America," Vol. 8, published annually by the B. F. Goodrich Rubber Co., is now off the press. One of the features of the handbook is an article entitled "The Relation of Solid and Pneumatic Tires to Motor Truck Efficiency," from a paper read before the S. A. E.

The Parker Motor Truck Co., of Milwaukee, Wis., announces that its new catalog is ready for distribution. It is confined almost exclusively to truck features and recent changes in Parker models.

The Petroleum Outlook, an economic study, with special reference to American fields, maps and charts, with an illuminating discussion of the status of numerous oil fields which will be distributed to bankers, brokers, manufacturers and investors free on application. The treatise can be obtained from Dept. D, Arthur D. Little, Inc., 30 Charles River Road, Cambridge, Mass.

The Modern Electroplater, a particularly timely and careful treatise on the principles of electro deposition of metals, their practical application and industrial use. Much of the volume is devoted to the proper equipment necessary. The hints throughout the book are especially adaptable to electroplating in the automobile industry. Kenneth M. Coggeshall, E. E., is the author. A copy can be obtained from the Norman W. Henley Publishing Co., 2 West 45th St., New York, for $3.00.

Personal Items

N. D. Beaver has taken over the business of the Standard Motor Sales Co., of Denver, Colo., distributor of Standard trucks. He will cover the states of New Mexico, Nebraska, Wyoming and Colorado.

W. R. Best, formerly with the Bankers' Commercial Security Company, 14 Wall Street, New York City, has joined the Acason Motor Truck Company forces in Detroit and will assist H. P. Mills in connection with Detroit sales.

Guy R. Chrysler, formerly vice-president and sales manager of the Gramm-Bernstein Sales Corp., has been appointed sales manager of the Rainier Motor Corp., 225-227 West 58th St., New York City, manufacturer of worm drive trucks.

O. F. Conklin, president and general manager of the Remy Electric Division of the General Motors Corp., Anderson, Ind., has surrendered his duties as general manager to devote all his time to his position as president. He will be ably succeeded by J. D. Mooney, who has been elevated from the position of assistant general manager.

Roy Davey, who at the request of the receiver returned to his old post as general sales manager of the Bethlehem Motors Corp., has announced his withdrawal from that organization.

Putnam Drew, well known in the automobile advertising business, is in charge of advertising and publicity for the new Lion truck, manufactured by the Liendorf Motor Sales Corp., New York.

Henry H. Edwards, vice-president of the Bantam Ball Bearing Co., Bantam, Conn., has assumed the duties of general manager of the company's main plant at Bantam.

C. B. Ellison, Cadillac, Mich., has taken the agency for the Reo Motor Car Co., for Michigan conties of Wexford and Missaukee.

J. William Giguere, who has been five years with the motor truck sales organization of the Packard Motor Car Co., of New York, has resigned to enter the insurance field, specializing in commercial automobile risks.

W. W. Heindel, formerly of the truck department of the Foss-Hughes Co., Philadelphia, Pa., is now manager of the Cunningham-Holmes Co., 226 W. Third St., Cincinnati, O., Pierce-Arrow truck distributor.

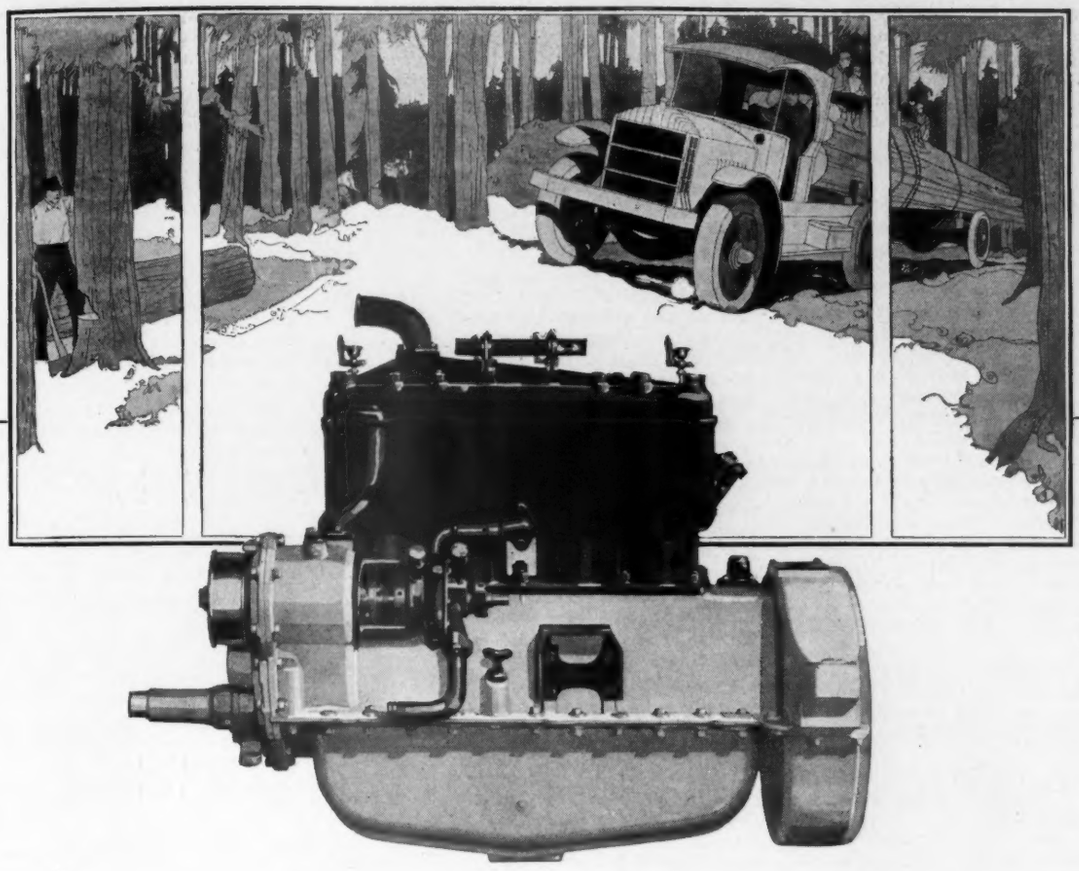
Dwight T. Hersey, general sales manager of the Jenkins Vulcan Spring Co., Richmond, Ind., has just completed a coast to coast tour in the interests of his firm. He reports that the recent depression has had a most beneficial effect on the industry by a tightening process and the elimination of outgrown policies.

Dan Gilkey
Vice-president in charge of sales and advertising, Acason Motor Truck Co.

William F. Blaha
The new acting sales manager of the Available Truck Co., Chicago, Ill.

T. P. Nickell
Special sales representative of the Jenkins Vulcan Spring Co., Richmond, Ind.

Charles P. Hughes
Who resigned as field secretary of the A. E. A. to enter the automotive selling field.



BUDA-ENGINED trucks are commonly known to yield a remarkably large return on the money invested in them.

Buda's prompt and thrifty power—the ability to cope with every road condition and to maintain exacting schedules at low cost—guarantees economical hauling.

Buda's quality performance comes from its sound design, its rugged build, and that fine shop accuracy fixed by 39 years of engineering and manufacturing experience.

Sure of its constant serviceability 89 representative automotive manufacturers now use the Buda engine as standard equipment.

THE BUDA COMPANY, HARVEY CHICAGO SUBURB ILL.

ESTABLISHED 1881

BUDA

The ENGINE

B. Rodger Imhoff, who has been located permanently in Detroit as field engineer for the Precision and Thread Grinder Manufacturing Co., 1932 Arch St., Philadelphia, Pa., has been appointed sales manager.

J. H. Kelly, of the Parker Motor Truck Co., Milwaukee, Wis., has resigned. He will make his new headquarters at Indianapolis, Ind.

Albert C. Kelder has been appointed district manager in the Washington, D. C., territory for the Bethlehem Motors, Allentown, Pa.

W. B. Klander, formerly of Greenwood, S. C., has opened a large radiator repair plant in Raleigh, N. C., with W. L. Cato as manager.

Charles Melhado, in charge of export sales for the Bethlehem Motors Corp., Allentown, Pa., has been appointed general sales manager of that firm.

A. H. Mollenhauser has been selected as sales manager of the Equitable Motor Truck Co., Inc., N. Y., distributor of the Ace trucks.

Cornelius T. Myers, consulting engineer, has been issued patents in France, Belgium and Italy covering the Myers Magazine Oiling system of chassis lubrication. The European licensing arrangements will be handled by Bart O. Berg, 32 Avenue des Champs Elysees, Paris, who is well known in the automobile industry.

John W. Price, former judge and attorney, of Bristol, Tenn., has been appointed president of the DeLion Tire and Rubber Co., of Baltimore, Md.

A. A. Ryan has recently been elected a member of the Chicago Pneumatic Tool Co.'s board of directors.

Walden W. Shaw, head of the W. W. Shaw Corp., which operate the yellow cab service in Chicago and a motor vehicle manufacturing plant, resigned as president.

Charles C. Spies has resigned as district sales manager of the Faultless Rubber Co., Philadelphia district.

F. S. Stratton, sales manager of the Packard Motor Car Co., is now connected with Grant Motors in Cleveland, O.

R. H. Turner has become factory representative for the Hobbs Storage Battery Co., of Los Angeles at the Dallas, Tex., branch office.

Carl Velguth, sales and advertising manager of the John Obenberger Forge Co., of Milwaukee, Wis., has severed his connections with that concern. His future plans are unknown.

L. E. Vesey has been made district sales manager of the newly opened New York branch, 25 West 43rd St., of the Lancaster Steel Products Co.

John N. Willys and his business associates have acquired control of the U. S. Light & Heat Corp., which manufactures storage batteries and electric lighting and starting devices for automobiles. The plant is located at Niagara Falls, N. Y.

Frank L. Way, of Meriden, Conn., has been appointed manager of the Meriden and New Britain branches of Russell P. Taber, Inc., distributor of Reo and Peerless.

Harry W. Harrison, Inc., of Los Angeles, Calif., will begin immediately the distribution of Westinghouse Union Batteries. The firm has been appointed agent for the territory of southern California and Arizona.

J. J. Lake, former retail sales manager of the Chicago branch of the Reo Motor Car Co., has been appointed sales manager by McShane-Hill, Chicago Liberty dealers. Mr. Lake has been identified with the motor industry for more than sixteen years.

Grant E. McKinley, of Columbus, O., has been appointed manager of the Toledo branch of the Times Square Auto Supply Co. He succeeds Harry Seitz, who will become territory sales manager in the northern Ohio district.

New Incorporations

The Garfield Steam Truck Corp., of Dover, Del., has been incorporated at $1,000,000 to manufacture steam, gas and internal combustion engines.

The Weber Carburetor Service, automobiles and accessories, has recently been incorporated in New York at $110,000.

The Kroyer Motors Co., with a capitalization of $5,000,000, has been recently incorporated at Wilmington, Del., to manufacture and sell automobiles.

The Flinn-Hall Co., Darlington, S. C., has been organized at $30,000 to engage in the business of repairing, buying and selling motor cars, accessories and supplies.

The Lomer Armor Tire Corp., a $500,000 concern incorporated under the laws of Massachusetts, has recently been organized to handle 20 per cent of the tire output of the New Lomer Armor Tire Co., of New Castle, Ind. Reports from the New Castle factory show the plant to be fast nearing completion.

The Kankakee Truck Sales Co., of Louisville, Ky., has filed articles of incorporation for the distribution of motor trucks. The firm is capitalized at $10,000.

The Hinckley Myers Co., of Jackson, Mich., has been formed to manufacture garage equipment, tools and automobile accessories. The firm's capitalization is $150,000.

The Michigan Tire and Service Co., of Detroit, Mich., has been incorporated with an authorized capital stock of $100,000 common and $25,000 preferred, all of which has been subscribed.

The Harris Co., Inc., of Boston, Mass., automobile accessories, has been incorporated at a capital of $200,000. Frank J. Harris, James R. Powers and Robert C. Turner are the incorporators.

New Agencies

The Equitable Motor Truck Co., 136th St. and Madison Ave., New York, is the new eastern distributor for Ace motor trucks. The firm occupies a new building covering 40,000 sq. ft.

The Miller Rubber Co., Akron, O., has opened a branch at 1105 14th St., N. W., Washington, D. C., in charge of E. T. Sloan.

Fox Bros. & McKay, of Kingsville, Canada, has been awarded the county of Essex, Ontario, for the sales and distribution of Beaver motor trucks.

Baldwin Service Co., of Detroit, is the new Michigan distributor for the Scoe carburetor.

Mirk, Scales Harford Co., 617 Turk St., San Francisco, Cal., will distribute Westinghouse Union batteries in the San Francisco territory.

The Alemite Lubricator Co., of Chicago, Ill., has opened a branch office at 247 Monroe Ave., Memphis, Tenn. George Hyatt, of Memphis, will take charge and will control the territory of northern Mississippi, eastern Arkansas, western Kentucky and Tennessee.

The J. D. Bowen Co., Tampa, Fla., has been announced as Florida distributor for the products of the McClaren Rubber Co., of Charlotte, N. C.

The A. J. Alsdorf Corp., 404 South Wells St., Chicago, Ill., export distributor for accessory manufacturers, has been appointed agent for export distribution of Norlund Safety Jacks, manufactured by the Norlund Novelty Co., of Williamsport, Pa.

The Wayne Engineering Co., at Honesdale, Pa., announces the opening of a New York sales office at 1400 Broadway, New York City. Edmund Hoffman has been appointed sales manager in charge of this office.

The Roller-Smith Co., 233 Broadway, New York, announces the appointment of the Mountain States Machinery Co., 1710 Glenarm St., Denver, Colo., as its agent in the states of Colorado, Wyoming and New Mexico.

The Autocar Sales and Service Co., Dallas, Tex., will open a branch at Dallas for the distribution of Autocars. Edward Dintenfass, assistant manager of the New York branch, has been appointed manager of the new agency.

A. K. Foss, of Calgary, Alberta, Can., will handle Duplex trucks in the territory covered by the Canadian cities of Calgary, Edmonton, Lethbridge, Medicine Hat, Red Deer and Wetaskiwin.

Removals and Trade Changes

The Randal Republic Co., Salt Lake City, Utah, has moved to its new quarters at 53-55 Second East Street, Salt Lake City.

The Steven Motor Sales Co., of Chicago, Ill., has moved to its new company building, 211 Michigan Ave. The firm handles the Day-Elder motor trucks.

The Kelly-Springfield Tire Co., 294 Jefferson Ave., Detroit, Mich., is now occupying 27,000 sq. ft. of floor space at 1214 Cass Ave., the new building having just been completed.

The Luster Machine Co., 917 Arch St., Philadelphia, has been purchased by Fairbanks, Morse & Co., Philadelphia. E. J. Luster, the president, will have charge of the machine tool department of the Fairbanks, Morse firm.

The Michigan Hearse & Motor Co., Grand Rapids, Mich., has changed its corporate name to the Michigan Body and Motor Co.

The Reagin-Denton Motor Co., of Tampa, Fla., has moved from its former headquarters on Franklin St., to a new spacious building covering an acre of floor space on Polk St. The firm is state agent for the Vim truck.

The Kearns-Hughie Motors Co., manufacturers of Kearns motor trucks, are now located at Danville, Pa.

The Bissinger Co., dealer in automotive electrical equipment and service, has moved to its modern home at 1753-83 East 21st St., Cleveland, O.

The Indiana Cord and Tire Co., formerly of Mishawaka, Ind., has moved to Burr Oak, Mich., and is preparing to produce special inner liners for tires. About $10,000 worth of stock has been purchased by the people of that city.

George T. Carroll Co., 719 N. Broad St., Philadelphia, Pa., automobile accessory dealer, has moved its place of business to 13th and Race Sts. This concern is among the accessory pioneers of Philadelphia.

The Motor Truck Association of America, Inc., has moved from 1790 Broadway to 144 West 65th St., New York.

The Miscampbell Co., of Superior, Wis., has purchased the plant of the Zenith Bag Co. and will increase the capacity of its truck and automobile body factory.

The Globe Rubber Tire Manufacturing Co. announces the removal of its general executive and sales office from 1755 Broadway, New York City, to its factory at Trenton.

two stories high. Where alternating current is used, of course, there is merely a reduction of voltage through additional transformers, but in some of the sub-stations there will be converters to make the change to direct current.

In addition there is a main boiler house, 61 x 125 ft., with two stories and a mezzanine floor and a one-story pumping station, 50 x 125.

Electric power is used to drive the air compressors furnishing the compressed air in the plant as well as the pumps which supply water both for use in the various processes and for fire protection. In addition, electric power is used in the operation of magneto clutches and brakes with which all the large lines of mills and rolls are equipped as a safety-first feature.

New Motor Truck Standards Adopted by N. A. C. C.

THE motor truck members of the National Automobile Chamber of Commerce, in a general session held recently at New York, adopted new standards for body weight allowances, gross weight, chassis, body and freight load, and the Standards Committee's recommendations on speeds.

Under the new standards, Demonstration Charges for commercial cars embodied in Standards adopted in 1912, are eliminated.

The recommendations of the Standards Committee follow:

"We recommend the following changes in the original standards adopted in 1912 for motor trucks by the National Automobile Chamber of Commerce:

Standard Speed Rating

"We recommend that the present table (1912 Standards) be eliminated and that the following table be adopted:

Gross Weight Chassis, Body & Freight Load	Speed Miles per Hour
Pneumatic tires up to 28,000 lbs.	25
Solid rubber tires up to	
4,000 lbs.	25
8,000 "	20
12,000 "	18
16,000 "	16
20,000 "	15
24,000 "	15
26,000 "	15
28,000 "	15

Note.—These speed ratings should be recognized by the manufacturer as the **maximum** and not exceeded under any conditions. The manufacturer should stamp on the truck caution plate the actual maximum speed with load for which the truck is built and beyond which the truck is not guaranteed.

Standard Body Weight Allowances for Motor Trucks

"We recommend that the present table (1912 Standards) be eliminated and that the following table be adopted:

Load Tons.	Body Weight Allowance, Pounds.
1 ton	1200 lbs.
1½ "	
2 ton	1500 "
2½ "	
3 ton	
3½ "	2000 "
4 "	
5 ton and over	2500 "

"We recommend that no change be made in the note which now accompanies the table on standard body weight allowances.

Standard Caution Plate for Motor Trucks

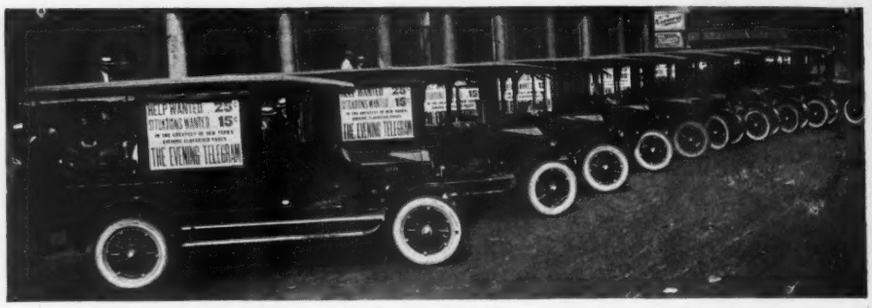
"Committee recommends that the present form of plate should be retained, and that the six-foot notes should be retained with the exception of the note headed 'Speed Rating' which should be revised to read as follows: 'The figures given in the table headed 'Standard Speed Ratings for Motor Trucks' should be recognized by the manufacturer as the maximum and not exceeded under any condition. Manufacturer should stamp on the truck caution plate the actual maximum speed with load for which the truck was built and beyond which truck is not guaranteed."

"As stated above truck manufacturers should be responsible for six of the weights which are called for on this plate, as follows:

Freight load capacity.... Standard
Body weight allowance ... Standard
Weight of chassis ..... Standard Actual
Total weight chassis body and load ..... Standard Actual

"The truck manufacturer, his distributor, dealer, or agent, should be made responsible to see that the body is weighed and that the plate is stamped:

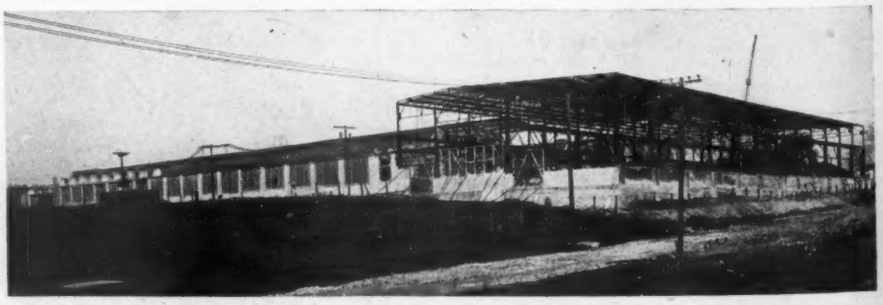
Freight load capacity .... Actual
Body weight allowance.... Actual



Line of Atlas Speed Trucks Arranged Before One of the Country's Largest Newspaper Publishing Houses Preparatory to Their Daily Run, in Which They Completely Circularize the City

View of the First Unit of the Ruggles Motor Truck Co., Ltd., London, Canada, Now Under the Course of Construction

The front is practically completed and the remainder is rapidly progressing. This unit will be 83 ft. wide and 417 ft. long



Showing the Steel Plant and Its Addition, Which is Now Being Erected, of the Heil Co., Milwaukee, Wisconsin

This addition, which is 135 x 260 ft., giving a floor space of more than four acres, has a fifty and forty-foot crane-runway in addition to seven ten-ton cranes with which it will be equipped later. New railroad tracks are being laid so that the freight cars can be run in from both ends, one for receiving and the other for shipping.

GARFORD

Busy Trucks Make Busier Freight Cars

RECENTLY it was shown that the state of Kansas had not been able to secure sufficient cars to move its unshipped surplus of *last year's crop.*

And now the new crop is ready—approximately 100,000,000 bushels in this state alone.

Since it is obviously impossible to build even a fraction of the needed freight cars in time to meet the emergency, it behooves the nation to make the most intensive use of those traffic facilities immediately available.

The above is but one instance. From all parts of the country there is similar evidence. The steel mills at Pittsburgh, the factories at Detroit, the grain elevators of Minneapolis, the warehouses of Chicago—all are clamoring for transportation, while thousands of loaded cars stand idle.

The railroads are deserving of nation-wide co-operation. In the period just past the replacement of our rolling stock has not even kept pace with the ordinary retirement of cars. Yet the volume of our freight shipments has increased by leaps and bounds.

Motor trucks are the quickest and most effective means at hand. Their greater capacity over team-drawn vehicles, their mobility and flexibility in and about unloading points, their speed and untiring effort, all recommend them.

Make the fullest and most intensive use of your trucks; find out if you cannot get your goods unloaded directly onto trucks from the freight cars. If shipments are delayed on clogged spurs or outside of cities, learn whether you cannot help eliminate the delays and congestion in yards and at overcrowded points by utilizing your trucks.

Every effort along this line is a patriotic endeavor—a definite contribution to prosperity and common welfare.

The support of the motor truck by business men, bankers, legislative bodies and executives is imperative at this time. Busy trucks will end the appalling waste that goes with idle freight cars.

Keep the Traffic Moving

TRUCKS

Unrestricted Distribution of Farm Products Prime Requisite Now

BUSINESS men and shippers throughout the country will be afforded material for some serious thought along transportation lines by the figures presented in the official Car Service report for the month of August, which shows the greatest movement of freights in the history of the country. This vast freight movement, it is reported, exceeded the maximum record during the war period. A heavy increase in requisitions for cars was recorded during the first week in September. Figures compiled by United States Department of Commerce show that the greatest crops the world has ever known, are moving to domestic and foreign markets.

While the excellent crop reports are encouraging in a business way they present at the same time a complicated addition to the transportation problem with which business of this nation is confronted.

The railroads of the country, crippled and handicapped in their efforts to resume normal operations after the frenzied conditions brought about by the war, are being thrown against a supreme task which will be difficult for them to perform. The action of the Interstate Commerce Commission in adjusting the wage demands of the railroad workers and in granting increased freight and passenger rates to the railroads has materially aided them in organizing a personnel to discharge their manifold duties. Naturally, the roads have been able to increase their equipment and the facilities for handling the job.

The railroads will now have more money to spend for the improvement of their facilities and their increased rates will place them on a more sound financial basis. But in spite of these things the fact remains that the roads will not be able to meet the serious situation immediately, because too much time is required for the construction of cars and locomotives and the extension of terminals. As a consequence there is but one solution left. It is imperative that the motor truck be utilized to its full extent this fall to help the railroads fight their way through the battle into which they will be plunged by the prosperous agricultural conditions.

Numerous motor truck manufacturers have been consulted recently in regard to their views on the situation and it has been found that they are willing to exercise their utmost efforts to bring about a successful disposition of the work.

Among those interviewed was E. A. Williams, Jr., president of the Garford Motor Truck Co., Lima, Ohio. "We must not forget that this is a two-sided proposition," Mr. Williams said. "In our efforts to see that the nation's crops are properly handled during the fall months we must not become so engrossed in that work that we will neglect industrial needs.

"It's a ticklish job, no matter from what angle we approach it. National prosperity hangs in the balance. The future looks wonderful. The prosperity of the farmer is one of the basic foundations of the national economic structure. By all means he must be cared for in this emergency. Unless he is afforded the proper transportation facilities for the marketing of his crops prosperity will be stinted. Upon his success largely depends the degree to which normal business conditions will be resumed next year.

"We will be able to see this fall our shortcomings of the past in regard to the construction of an adequate system of highways. In many sections of the country farmers will have the opportunity of good roads, will be able to haul their produce to shipping stations by motor truck and thereby will speed up railroad movements. The mobility of their trucks will prevent the tie-up of railroad rolling stock and avoid congestion at busy shipping centers. In other sections of the country, however, the farmers and the railroads will be deprived of this advantage.

"Manufacturers in large cities and in industrial centers are coming to realize more than ever the use that they will be expected to make of their trucks and fleets in the approaching months. The railroads are going into the biggest job they have ever had. It is up to the motor truck to help them through.

"The outlook for the immediate future of this country is more cheerful than it has been in years. It is not a matter of conjecture. The United States crop reports based on actual surveys tell their own story of agricultural conditions. The gradual trend of industrial and business affairs toward a normal basis can be observed without study. What we need now most of all is transportation. The motor truck can and will help the railroads 'go over the top.'"

Niagara is to Furnish New Dunlop Plant With Power

The new plant of the Dunlop Tire & Rubber Corp., of America, a fifteen million dollar factory located a mile north of Buffalo, gets part of its power from Niagara Falls direct and the balance is furnished by a steam plant of the Buffalo General Electric Company. The factory units cover 35 acres of actual floor space.

The initial installation at the Dunlop plant will require a total of 253 electric motors in all sizes, having an aggregate rating of 16,500 h.p. In addition there are 15 motor generator sets with a total capacity of 1260 h.p. and nine synchronous converters of total capacity of 990 K. W. Most of these will be constant speed alternating current motors, among them being twelve 500 h.p. synchronous motor driving lines of masticating and mixing mills and eighteen 250 h.p. synchronous motors driving warming mills. The variable speed motors are driven by direct current which is supplied from synchronous converters located in the distributing stations, of which there are eight in the factory. The largest of the direct current motors are 100 h.p. and 60 h.p. driving rubber strip and tread calendars, respectively. The current comes to the plant at a tension of 12,000 volts and is received at a central substation of two stories, 85 x 110 ft. in extent of ground plan, where it is reduced by transformers to 2300 volts and then distributed through an underground cable system through seven sub-stations, each of which is 17 x 72 ft. in extent and

Bird's-Eye View of the Huge Dunlop Plant on the Niagara in Its Last Stages of Construction

Make 1921 your biggest year

The reputation of Jumbo Trucks will help you do it. Not a dissatisfied Jumbo owner that we know of in all the world.

The good will of satisfied owners is more essential for a substantial future than the big profits of undersize construction—*The Jumbo Creed.*

Jumbo Trucks in operation prove the wisdom of this policy. Records of 20,000 to 30,000 miles without a cent for repairs—without even changing tires—are common to Jumbo owners.

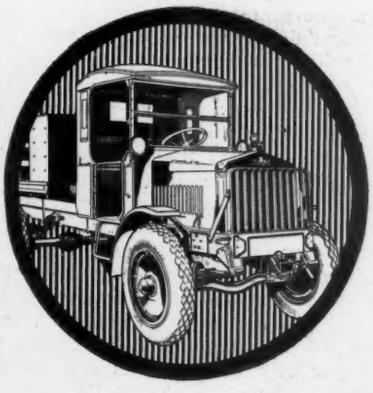
That's because Jumbo Trucks are built with *a large factor of safety* and survive the abuse of heavy haulage.

The Jumbo dealer renders truck buyers a definite service and profits thereby—not only today, but for years to come.

These facts comprise but a small part of the Jumbo story. We believe we can convince any alert dealer of the exceptional future offered by Jumbo Trucks.

Write for full facts and sales plan

Jumbo Trucks Always Come Through



NELSON MOTOR TRUCK COMPANY

Saginaw, Michigan

THE Complete Truck

JUMBO

The Complete Truck

Are You Selling Trucks to Farmers?

(*Continued from page 21*)

the ½ and ¾-ton trucks, 15.2 for the 1-ton, 21.3 cents for the 1¼ and 1½-ton, and 25.8 cents for the 2-ton.

The average cost of hauling crops, including the value of the driver's time, which is 50 cents per hour, is 24 cents per ton mile with the ½ and ¾-ton trucks, 24.1 cents with the 1-ton, 23.3 cents with the 1¼ and 1½-ton, and 21.5 cents with the 2-ton trucks.

Nearly 85 per cent of these trucks had not been out of commission when needed for a single day during the year covered by the reports, and 80 per cent of the owners stated that they had not lost any appreciable time on account of motor and tire trouble, breakage, etc., when using their trucks. About 1 truck in 15 was out of commission more than 5 days, however, and 1 owner in 40 reported a loss of more than 5 per cent of the time when using his truck.

Fifty-six per cent of these men have not reduced the number of their work-stock since purchasing trucks. Twenty-four per cent have disposed of one or two head, and 20 per cent of more than two head.

Half of these men own tractors as well as motor trucks. Most of the tractors are owned on the large farms, however. Only 33 per cent of the men whose farms contain 160 crop acres or less own tractors, while 65 per cent of those with over 320 crop acres own them. The number of work-stock kept on the farms where both trucks and tractors are owned is only slightly less than the number kept on the farms of corresponding size where only trucks are owned.

Seventy-eight per cent of these farmers state that their truck reduce the expense for hired help. On those farms where there is a reduction the operators estimate that it amounts to $209 per year on the average.

Electrical Exposition Reveals a Few Lessons in Truck Merchandising

How Industrial Trucks, Electric Hoists and Loading Apparatus Can be Utilized to Aid in Increasing Hauling Capacity of Gasoline Trucks

By C. S. PERRIE

THE Thirteenth Annual Electrical Exposition, which closed on October 16, at the Grand Central Palace, New York City, should have made a greater appeal to the dealer, truck salesman, service manager and mechanic, and those interested in motor highway transportation than it did. It did impress those interested in the truck industry, but it will require some effort to co-ordinate the electrical exposition with the sales and service of gasoline motor trucks. However, they can be linked up, at least this is how the proposition appealed to the writer.

As he analyzed the exhibits he was impressed with the possibilities of the truck dealer, salesman and transportation expert making use of the lessons taught by the demonstration of industrial trucks, conveying equipment and hoists and their aid in selling motor trucks. And a truck dealer whom the writer met at the show, was also impressed with the possibilities or rather opportunities presented and so together we inspected the hoist, conveying equipment and the truck exhibits.

Take for example, a type of industrial truck that draws a string of trailers. The writer recalls several instances of where motor trucks were used in certain industries and where one of the industrial trucks could shuttle back and forth hauling trailers to the trucks which were equipped with a special body on which the hand trucks were rolled. If I remember correctly, the trucks were hauled by hand for some little distance, and this applied both to the handling of the raw and finished material. Use of the electrically operated industrial unit with special trailers would have cut down the loading and unloading time to say nothing of greatly increasing the gross tonnage daily.

Another case comes to mind, that of a concern that constructed a special track on its property to haul the semi-finished material to a platform where it was loaded on to motor trucks. The cost of that equipment greatly exceeds that of an industrial truck capable of pulling several trailers, and according to data supplied by an industrial exhibitor, the cost per ton mile would have been less with the industrial unit than with the one in use. Any good-surfaced road could be used for the truck. And with the case in mind the use of the industrial truck with trailer would save one handling of the raw material. The dealer who accompanied writer was quite impressed with the sales possibilities and said that when he reached home, he was going to look into the industrial unit as an auxiliary to the motor truck in big manufacturing plants. This dealer said he believed that with co-operation by the industrial truck engineers that some of the knotty transportation problems in his territory could be solved. At least, this dealer proposed to get a slant on the use of industrial trucks with motor trucks.

Hoists and Truck Sales

The hoists and traveling cranes also suggested the possibility of the motor truck expert making use of these in some particular haulage problem involving considerable loading and unloading, especially where trucks ordinarily are subjected to considerable idleness. The thought is that not enough consideration is being given to loading and unloading equipment for motor trucks by the average truck salesman. Many sales are lost because the truck salesman only knows what his truck will do under ordinary conditions. It is because of this unscientific way of selling trucks that the average salesman fails to impress the big buyer, who must be shown something besides a pretty picture of a truck.

To quote a concrete example. A large industrial plant bought a 5-ton truck from a dealer representing a company, that is said to be long on the engineering ideas in merchandising trucks. The truck was given a fair trial, then sold—for the expert accountant of the company proved to the board of directors that the cost per ton mile was prohibitive, and when it comes down to brass tacks these accountants have the best little argument in the world—cold figures. Many a truck salesman has stubbed his toe against the accountant's figures.

Some time later another truck salesman—also representative of a well-known make of truck—approached the company, but in a different manner. He got acquainted with the engineer and spent some time studying how the raw and finished material was hauled, minimum and maximum amounts, and secured some cost figures under the methods in use. After considerable study the truck salesman advocated the use of an electric unit for hauling the raw material in small trucks or trailers and these were rolled on to the waiting truck. A similar system was employed at the finishing plant. The result was that the truck was kept busy shuttling back and forth—and the cost per ton mile did not leave the accountant a leg to stand on. It is interesting to note that many, many truck salesmen endeavored to sell the company trucks before the real salesman came along. He sold because he had something tangible to offer. He secured the interest of the buyer from the start. It was not a question of price of the truck. The buyer wasn't interested in that. What he wanted to know was would a truck haul more tons per day than the present system and would it be cheaper? The salesman showed him how by changing the loading and unloading methods—which involved some slight factory changes—that it was possible and then went on to prove he was right.

It takes real salesmanship to land a contract when the prospect has a truck or trucks of a make different from that handled by the salesman. Yet there is a class of truck salesmen—real salesmen—who are selling Green trucks where Blues are owned. Not because the Green are better designed or have better workmanship or material, but because the salesman can analyze the prospect's transportation problems and show him how more intelligent use can be made of the Green trucks when a Green salesman supervises their use, etc. The class of salesmen working along these lines is very, very scarce, but in the near future the writer is going to give some concrete examples of how a salesman sold his trucks to big concerns using another make—and both are rated A1, at that. And both give good service.

Electrics and Cost Per Mile

Let's return to the electric show. It was a good show, and there were many interesting exhibits. Of course, there were electric trucks, four or five makers having displays. There is no gainsaying the fact that when it comes to short hauls that the electric truck is a wonderful proposition. This may not sound just right or diplomatic, coming from a gasoline booster, but just look over some of the cost figures of the electric for short haul work. The Ward Motor Vehicle Company, Mt. Vernon, N. Y., maker of the Ward electrics, had a few salesmen at their display that quoted some interesting figures on cost per mile, repairs, etc. Incidentally there are quite a number of the Ward electrics running in and around New York City, which are used by department stores, butchers, grocers, laundries, dairies, etc. The Sheffield Farms, one of the biggest distributors of milk and dairy products, was represented at the display in the form of a handsomely finished and lettered delivery wagon.

The New York representative of the Oneida Motor Truck Company, Green Bay, Wis., which concern, by the way, is said to enjoy the novel distinction of being the only manufacturer of both gasoline and electric commercial cars, showed the Oneida line of electrics including an exhibit of the unique Oneida two-gear drive, described in these columns.

Service Station Equipment

The service station superintendent, foreman and mechanics found many interesting time and labor-saving devices. These ranged from the electrically heated soldering iron to battery charging apparatus. The Electric Storage Battery Company, Philadelphia, maker of the well-known Exide batteries, displayed the various types, from the small ignition to the large truck battery. A feature of the exhibit was the demonstration of the high discharge test of the Exide cell. This attracted considerable attention from battery users and the trade.

Up on the third floor the Fairbanks Company, whose O. K. trade mark is becoming well known in the automotive industry. This concern had a most comprehensive exhibit of various types of lathes, shapers, power hammers, arc welding outfits, etc., which attracted the attention of the truck service station manager and his mechanics. All of the machines were electrically driven.

There was an unusually large number of electrically operated portable drills shown this year. One concern brought out an attachment, a grinder, which can be slipped over and locked to the drill. The drive is taken by an adjustable belt from the chuck to the spindle of the abrasive wheel. This provides a grinder that is portable and which can be clamped to the bench, if desired.

Valuable Information and Ideas

The demonstrations of lighting were sufficiently varied to be instructive to all. Those of the window displaying type could be copied to a good advantage by some dealers both for exhibiting the truck and truck equipment. Correct and efficient lighting of a factory was shown and the plan could be applied to the service station and repair shop, many of which are poorly lighted which means less productive work. Taken as a whole the electrical exposition of 1920 surpassed that of the previous year. It should be better patronized by the truck dealer, his salesmen, service manager and mechanics and would be, perhaps, if they realized the advantages to them.

Activities of the Motor Truck Association of Philadelphia

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THE COMMERCIAL CAR JOURNAL OFFICIAL ORGAN

SPEAKERS before the Motor Truck Association of Philadelphia at its first fall meeting pleaded for fair dealing with the motor truck industry on the part of the city, state and national authorities in matters of traffic regulations, building and maintenance of roads and proper use of proceeds of motor truck license fees.

Thomas Quirk, chairman of the legislative committee, and Walter Y. Anthony, president of the association, were very active throughout the business evening, criticizing the New Jersey bill, offering suggestions for the improvement of present roads, and pointing out what a powerful force an organization such as the M. T. A. of Philadelphia could be if the members worked together.

Police Lieutenant of Reserves Schultz gave a most instructive talk on traffic conditions in Philadelphia and told what they were endeavoring to do in the interests of improving such conditions on behalf of pedestrians and of drivers. He said by cutting out the left-hand turn at busy corners they had eliminated forty-nine accidents in one week and reduced number of arrests for careless driving.

Mr. Metcalf read a letter directed to Mayor Moore asking his co-operation on a bill to be presented to the Legislature seeking a partial rebate on automobile license fees paid in cities of the first and second class, to be used for improvement of streets.

Some interesting facts about the work of the state highway department were presented by W. R. D. Hall, of the Philadelphia National Bank. Mr. Hall said the automotive industry had grown so rapidly that it had been impossible to build roads of adequate strength to stand the strain of heavy traffic. He said that maintenance of road is the secret of good roads. While there are 98,000 miles af roads in Pennsylvania only 10,181 miles are improved. In 1920 the state highway department has placed under contract 328 miles of road work, making a total of 855 miles now under construction. He said 229 miles have been resurfaced in Pennsylvania this year out of fees for motor vehicle licenses. Mr. Hall pleaded that the license money be spread over the state for use in road work and that it should not revert to the city or county where it was collected, claiming that the vehicle owners of populous centers use the roads in the country more than the people of the country districts and should pay for them.

Davis E. Fenner, of the International Motors Co., New York City, gave an instructive talk on highways and the use of heavy-duty motor trucks. He said, contrary to general opinion, the bureau of public roads at Washington is demonstrating by tests that the heavy duty truck is not the chief destroyer of roads. He said that the same amount of merchandise hauled by a large number of high speed trucks, by their more frequent use of the road, wears them out as much or more than the same amount and the same load carried by heavy duty trucks. He claimed that it was unsprung weight and high speed that did the greatest damage to the road. He urged the adoption of uniform laws in all states on truck weight, size, load, tire widths, license fees in order to get the greater efficiency for the road user and for the authorities building.

Repairing North East Ignition System

(*Continued from page 52*)

made carefully else the timing will be disturbed. In addition, position of the horizontal shaft or driving member must not be disturbed that is, the engine must not be cranked. If these precautions are observed the breaker box can be replaced without retiming.

Replacing Breaker Box Assembly

When replacing the breaker box it will usually be found convenient to turn the vertical shaft so as to bring the mark on the rotor arm a few degrees back or in an opposite direction from the retard movement previously referred to, and from the mark on the breaker box shell, before the assembly is inserted in the base casting. This will offset the tendency the spiral gears have to shift the rotor arm forward when meshing the gears, and will bring the rotor arm into proper position.

To retime, first BE SURE IGNITION SWITCH IS AT "OFF" POSITION. Crank engine until piston of No. 1 cylinder has completed the compression stroke and is that number of degrees beyond dead center used by the maker of the engine. This must be determined by the mechanic, if not known. The truck manufacturer will supply the data or it can be ascertained by slowly cranking an engine, on which the setting is known to be correct, with spark fully retarded, until the distributor brush makes full contact with the metal segment of distributor cap which connects to the No. 1 cylinder. Carefully determine the exact location of No. 1 piston. Check the measurement a second time. In retiming set the No. 1 piston at the location thus determined.

Remove distributor cap and distributor arm. Use a broad bladed screw-driver and **back off the breaker cam nut one or two turns** so as to permit cam to be turned on the vertical shaft while this shaft remains stationary. **Replace rotor arm** and with it **turn cam slowly** in its normal direction of operation until, with the distributor rotor occupying the position where it would normally make contact with No. 1 distributor terminal, the breaker points are fully separated. Turn cam back a very short distance until contacts just meet. By thus turning the cam slightly farther than necessary and turning it back to the correct position, proper allowance is made for any play that may exist in the gears.

Testing and Timing

A test of the timing can be made by using a 2-candlepower test lamp of proper voltage construction, as shown by an accompanying sketch. With the ground return system connect one lead of the test lamp to the binding post and the other to the metal control arm or other metal part of engine. With the insulated system connect the leads to the two breaker box binding posts. The ground return has but one. To check the setting with test lamp, turn on ignition switch, replace the distributor rotor and rock the vertical shaft backwards and forwards as far as play in gears will permit. Note carefully the action of the breaker contacts as indicated by the lamp. If lamp is connected properly it will light the instant the contacts begin to be separated and go out at once when they meet. The setting of the cam should be so accurate that the lamp can thus be made to light and go out alternately as the shaft is rocked backward and forward by the distributor rotor. If setting is not correct the cam should be readjusted and test repeated until finding is correct. Too much emphasis cannot be laid upon the necessity of accurate timing, as a very slight inaccuracy of the cam setting will produce a very decided effect on the operation of the engine due to the fact that the speed of the crankshaft is twice that of the vertical distributor shaft.

As to Replacements

The dealer is urged to avoid the use of parts other than those produced by the North East Electric Company. New parts can be obtained from the factory branches or service stations and their use will avoid many troubles, both to the dealer and the user.

Concerning the Activities of a New Live Association

By C. S. PERRIE

A NOTE of warning, an intimation of the possibility of drastic legislation being enacted by the legislature of New York was sounded by Judge Frederick M. House, of the Traffic Court of New York City at a meeting of the Automotive Service Association of New York, on Thursday evening November 4. Magistrate House stated that unless accidents and fatalities decreased drastic bills would be introduced in the coming legislature.

A number of decisions handed down by leading high courts from various sources were quoted to show the legal standing of the motor vehicle, the responsibility of the driver and owner and how defendants in accident cases frequently pleaded as an excuse that their brakes or steering gear were faulty.

Judge House told how Australia disciplined the owner and driver of a motor vehicle who refused to have his brakes relined or steering gear overhauled when in need of attention. Whenever a driver or owner is discovered whose car has faulty brakes, steering gear or other components making for safe operation, the guilty driver, and owner as well, is told to take his machine to a garage and place it in cold storage for 20 days. Licenses to operate a garage and repair shop, as well as a motor vehicle, are granted by the commissioner, and the proprietor of the garage dare not allow use of the vehicle, until the time limit expires or rather official permission is granted, under penalty of having his license revoked. At the end of 20 days, if the repairs have been completed, the commissioner, upon notification by the owner, sends an inspector who tests the work. If satisfactory, permission is granted to operate the car.

Judge House said among other things that the truck is an essential and that business cannot be conducted without it, but—something must be done to decrease the number of avoidable accidents. He explained how manufacturers and dealers were co-operating with officials in a middle western city, because the trade realizes that it must protect the public against the reckless and unskilled driver.

The speaker asked for the co-operation of the service managers in educating the users of motor vehicles. He pointed out that being in contact with the user through the service station, the service manager and his executives could do much towards reducing accidents.

At the October meeting of the association the association went on record as favoring the inspection of brakes and steering gears on every truck coming into the service station. It was suggested that, if after an inspection is made and work is found necessary on brakes, etc., the owner whose attention is called to the matter and who refuses to recognize the need, that the inspection form be thus stamped or marked. This would supply a record in case the owner attempted to excuse his brakes or steering gear in the event of an accident.

A representative of the Chilton Company explained that the dealers in Rochester, N. Y., were to hold, in conjunction with the city authorities, a meeting the last of this month, when effort would be made to educate the public and owners of motor vehicles to the need of co-operating, to reduce the number of accidents.

The B. F. Goodrich Rubber Company's film depicting the antics of tires who organized a union to obtain better conditions and treatment, which was both educational and humorous, was shown by L. H. Gahris of the pneumatic tire department of the company.

Ethelbert Favary, head of the automotive department of technical training of Cooper Union, New York, described transportation conditions abroad, where he has been for several months past. He said that a great market awaited trucks in eastern Europe, but a special design would be necessary. He gave a semi-technical description of conditions and wear.

The meeting was the second of the season, the first being held on October 7, at which the subject of better inspection as a means of reducing the number of come-backs was discussed. On October 29 the association held a very successful smoker and entertainment at the rooms of the Automobile Dealers' Association. The next meeting scheduled is December 2, and on January 4 will be held the annual meeting and election of officers.

One of Ten Sanford Trucks Owned by the Towanda Construction Company of Towanda, Pa.

If Your Ideal is Customer Satisfaction—

THE Sanford MOTOR TRUCK

Models:
2½, 3½, 5 Ton

If you believe in selling the type of truck that exactly fills each customer's needs—even if that means foregoing a possible greater profit—

If you believe that getting the customer's signature on the "dotted line" is not the completion but the beginning of the transaction—

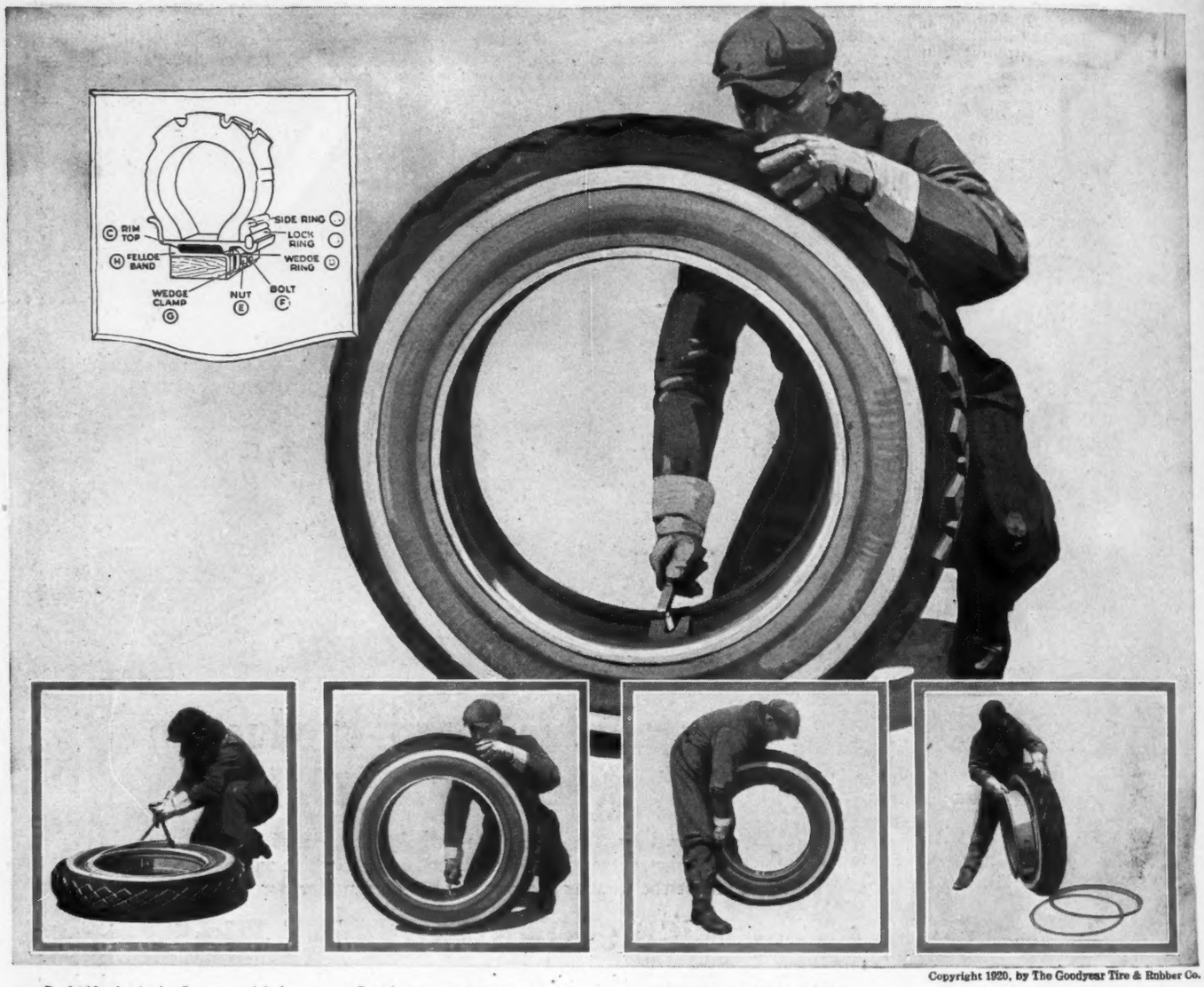
If you believe that customer-satisfaction on the first sale is a certainty only when you obtain a re-order—

Then you're the type of dealer that measures up to the Sanford standard. *And you'll find it very much worth your while to get in touch with us.*

Sanford Motor Truck Co.
Syracuse
N. Y.

Sanford

WORM DRIVE MOTOR TRUCKS



Push side ring back. Remove oval lock ring by forcing tire tool under loose end and around entire circumference.

Push valve stem through valve hole into tire with tire tool.

Slide rim around in the tire and at the same time pull off.

Remove rim from tire; remove flap and tube from tire.

Save Time and Labor with Goodyear Truck Rims

GOODYEAR Straight Side Truck Rims are so designed that they operate with exceptional ease, and they are light, rigid and strong.

The Straight Side type of rim was pioneered and developed by Goodyear engineers at the same time that they pioneered the straight side type of tire.

Goodyear Straight Side Rims of today retain all of the basic merits of the original design, and they retain also an exclusive feature that is of especial worth—the Goodyear oval lock ring. By reason of the oval contour of this lock ring, it fits snugly in its seat against the rim and side ring, yet it engages and disengages easily without disagreeable hammering and prying.

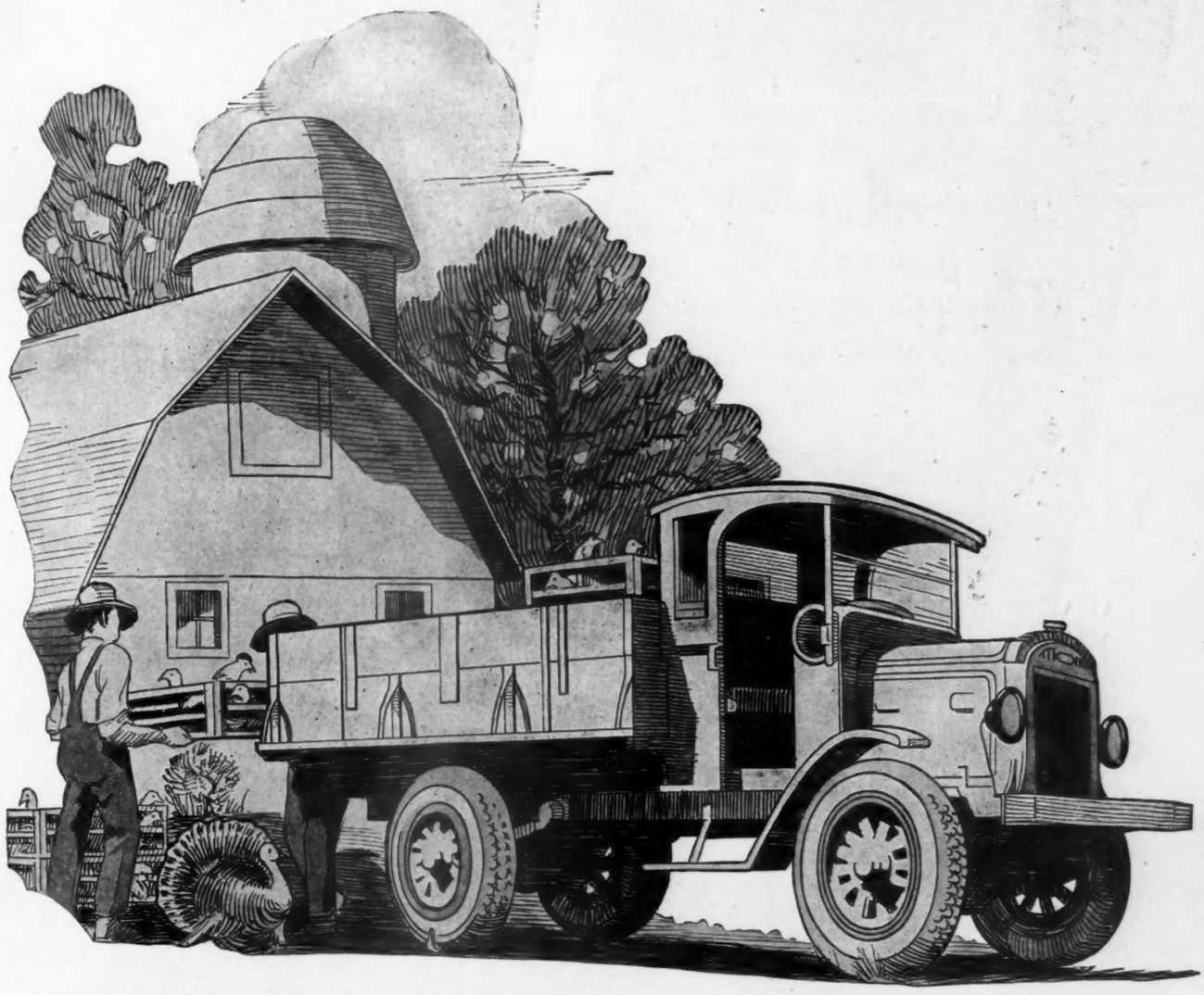
Because Goodyear rims are made like this for every truck need, in all sizes, in demountable and detachable types, they have been given substantial recognition by truck manufacturers.

Further information about these easily operated Goodyear Truck Rims can be obtained by writing to The Goodyear Tire & Rubber Company, at Akron, Ohio, or Los Angeles, California.

GOODYEAR

TRUCK RIMS

MOLINE
FARM MOTOR TRUCK



Its Wide-Open Market—

Progressive farmers, the advance guard of our 30,000,000 farm population, are already the greatest users of motor trucks in the world. And the farm market is barely scratched.

Progressive dealers will recognize the value of the Moline Agency.

Adapted to both farm and city use, the Moline 1½ ton Truck carries with it an unusual opportunity for the dealer. Moline products are well known throughout the entire agricultural world. Since 1865 the name "Moline" has been assurance of satisfaction and full value for money spent.

The Moline Truck is a worthy addition to the Moline Line. We are proud of it. We want good dealers to sell it. Write our nearest Branch for details.

MOLINE PLOW COMPANY, MOLINE, ILLINOIS

BRANCHES AT:

Moline	Dallas	Poughkeepsie	Stockton	Salt Lake City	Omaha	Des Moines	Columbus, O.
Atlanta	Oklahoma City	Baltimore	Spokane	Denver	Minneapolis	Bloomington, Ill.	Jackson, Mich.
New Orleans	St. Louis	Los Angeles	Portland	Kansas City	Sioux Falls	Indianapolis	Memphis

A Service Worth Talking About

WHEN it comes to news, the public must be served promptly. To make its own service more dependable, this big newspaper puts its delivery problem up to Clydesdale dependability. Then Clydesdales deliver The Sun on time.

THE CLYDESDALE MOTOR TRUCK COMPANY
CLYDE, OHIO

CLYDESDALE MOTOR TRUCKS

Two plants with a combined floor space of over 100,000 square feet for the manufacture of

FRAMES

In our Sharon and Ellwood City plants we have ample facilities for handling your quality frame requirements. Complete heat-treating and other equipment, a well united organization, quality materials, insure you absolutely satisfactory results. ***Send us your specifications.***

SHARON PRESSED STEEL CO., Sharon, Pa.

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Proven by Experience

Facts proven by *experience* convey the greatest significance to both dealers and users.

An experience of over forty years in studying road requirements throughout the world and in producing road vehicles of quality, economy and endurance reflects itself in the maximum performance Old Hickory Trucks are rendering.

There is an unusual satisfaction in selling and operating Old Hickory, not only because of its ability to make good through all contingencies but also because of the knowledge that an organization of permanence, dependability and *experience* stands back of it.

Write for particulars

Kentucky Wagon Manufacturing Co.
Incorporated
Louisville, Kentucky

"OLD HICKORY"

Honest Brake Lining

Garco Transmission Lining for Ford Cars

Garco Gaskette Roll

Holding brakes and customers is the best thing GARCO does. Because it is built for just that—to keep on making money for the dealer by giving extraordinary service to the user.

GARCO'S *solidly woven* construction does mean a lot, in use and in selling. A natural, permanent compactness—an unvarying, unyielding fabric from which there's no flattening, softening nor pulling apart; an assured gripping power down to the last wafer-thin strip of it—that's GARCO!

And GARCO will not harden or burn, nor lose its efficiency under the action of dust, oil or water. The specially selected asbestos fibre and the special Garco compound with which every strand is impregnated take care of that.

It's high time to be thinking about the brake lining you're going to handle during the coming winter and spring relining season. Write for the complete GARCO story—jobber, dealer or repair shop. We're helping on the selling end.

General Asbestos and Rubber Co.
Main Office and Factories, CHARLESTON, S. C.
Branches and Complete Stocks:
58 Warren Street, New York
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311 Water Street, Pittsburgh

TRADE ARCO MARK — ASBESTOS PRODUCTS · PACKINGS · BRAKE LINING · TEXTILES

ASBESTOS PRODUCTS

Packings

Locomotive Throttle and Air Pump Packings
High Pressure Piston Packings
Valve Stem Packing
Medium and Low Pressure Packings
Perfect Valve Rings
Flax Packings
High, Low and Medium Pressure Sheet Packings
Gaskets and Gasketing Material
Asbestos Wick and Rope
Asbestos Cement

Asbestos Automobile Specialties

Brake Lining
Transmission Lining for Fords
Cone Clutch and Disc Clutch Facings
Asbestos Spark Plug Yarn

Asbestos Textiles

Cloth — Yarn — Cord
Carded Fibre — Braided Tubing

GARCO

ASBESTOS BRAKE LINING

TWIN CITY

3½-Ton and 2-Ton Models

Twin City Trucks, like the other products of the Twin City Company, are building a permanent and profitable market wherever introduced.

Ten years of engineering leadership, one of the largest factories and a $7,000,000 organization with complete service facilities, give the dealer an ideal backing.

Branches

Lincoln, Neb.
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Indianapolis, Ind.
Peoria, Ill. — Kansas City, Mo.
Spokane, Wash.
St. Louis, Mo.
Salt Lake City, Utah

Twin City Company

Selling Products of
Minneapolis Steel & Machinery Co.
Minneapolis, U. S. A.

Canada: Minneapolis Steel & Machinery Co. of Canada, Ltd.—Winnipeg, Man.; Regina, Sask.; Calgary, Alta.

Export Office: Minneapolis Steel & Machinery Co. —154 Nassau Street, New York City

Distributors

Frank O. Renstrom Co.—San Francisco, and Los Angeles, Cal.

Baskerville & Dahl Co., Watertown, S.D.

Southern Machinery Co.—Atlanta, Ga.

R. B. George Machinery Co.—Dallas, Houston, Amarillo, San Antonio, Texas, and Crowley, La.

TRUCKS

You can get a Signal for YOUR Business

Only Two Hours to Lower Prices

On every hand you hear people ask, "Why aren't prices lower?" As a matter of fact lower prices on most food products are almost here. They are only a couple of hours away.

To get right down to brass tacks, it is a matter of miles. Right here in Detroit we are paying the usual high prices for vegetables and fruit, but within forty miles, or two hours by motor truck, vegetables and fruit are rotting for want of a market. The same situation prevails in practically every section of the country.

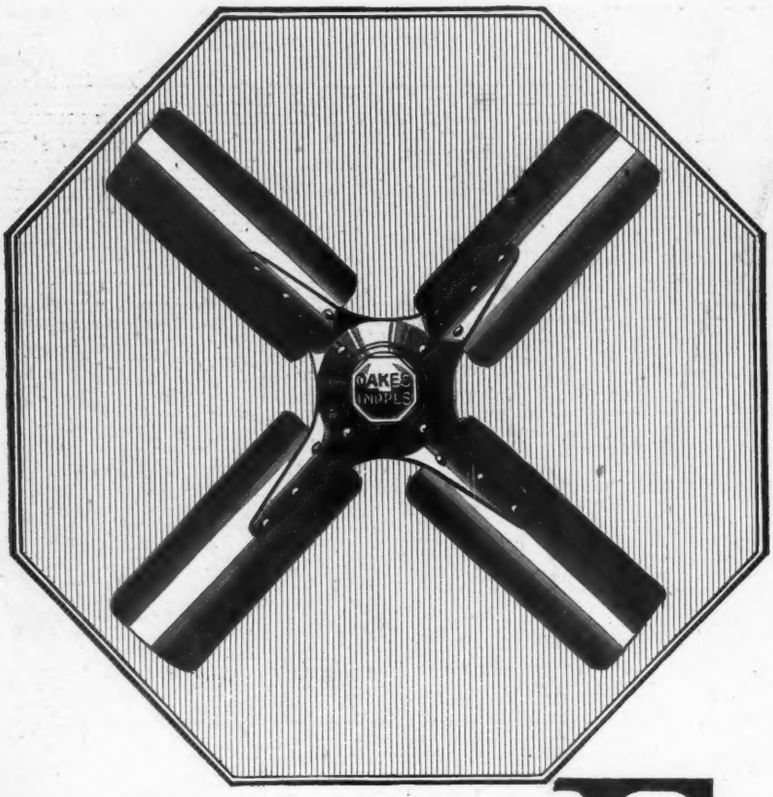
And while we argue that it is not right, the vegetables and fruit continue to rot.

Don't assail the railroads for their inability to deliver such products to your door. The solution of this wasteful situation is to relieve the railroads of this responsibility and use motor trucks for short hauls. Motor trucks will move short hauls quicker and cheaper—and will BRING PRICES DOWN.

1 to 5 Ton Capacity

SIGNAL

SIGNAL MOTOR TRUCK COMPANY
DETROIT



Oakes Fans

for Efficient Automotive Cooling

Most of America's best car builders, leading motor truck engineers and foremost makers of farm tractors, specify Oakes Fans. Are your engines Oakes equipped?

The OAKES COMPANY
Indianapolis, U.S.A.

PACIFIC COAST REPRESENTATIVE: A. H. COATES, CO. 41 SPEAR ST. SAN FRANCISCO

OAKES

"One Delay Pays Its Way"

WITH the approach of winter, Giant Grip Traction Equipment for trucks becomes even a better selling proposition.

Truck owners know that slippery pavements and snowdrifts mean stalled trucks, delayed deliveries, costly hold-ups.

Call their attention to Giant Grip Traction Equipment. The clamps, attached permanently to the rear wheels, last as long as the truck. The chains are kept in the tool box until needed. When needed they are attached in two minutes. No tools or jacking up. They give grip to power and pull the truck out of the worst holes. "One Delay Pays Their Way." That's why dealers find them so profitable to handle.

The Giant Grip Line includes a size for every type of wheel and tire. One style fits over *400* makes. This means a small investment in stock and a quick turnover.

Now is the best time to take on this line. Write to us for complete information concerning our interesting proposition.

GIANT GRIP MFG. CO.

Formerly Named Challoner Co.

Dept. 10 Established 1863 Oshkosh, Wis.

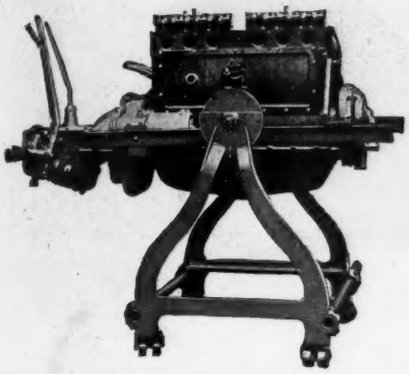
New York Distributors: Shultis Automotive Corp., 16-22 W. 61st St., New York City

Pacific Coast Representatives: Norman Cowan Co., Rooms 448 to 451, Rialto Bldg., San Francisco, Cal.

Giant Grip

Traction Equipment for Motor Trucks

Continental Equipment Solves Your Service Problems



Motor Stand

Place any kind of a motor in a Continental Motor Stand and you are ready to repair or rebuild any part easier and quicker and better. The motor may be completely revolved and locked in thirty-five different positions. This not only assures good light on the work, but also easy accessibility to every part.

Each stand is portable, mounted on large, double-wheeled casters, making it convenient to move from car to work-bench—for turning to get proper light—and in manufacturing plants for progressive assembly.

Every piece of Continental Equipment is thoroughly tried and tested before it is placed on the market. Designed and built by men with years of practical repair shop experience, Continental Equipment has proven itself worthy of the slogan: "The Efficiency Standard."

New time and labor saving devices are constantly being added to the following line of garage and manufacturing equipment:

Motor Stands	*Assembly and Welding Table*
Battery Stand	*Radiator Stand*
Axle Stand	*Creepers*
Bushing Presses	*Straightening Presses*
Piston Vises	*Riveting Jigs*
Aligning Devices	*Parts and Tool Trays*
Wrecking Trucks	*Burning-in Machines*
Gear Pullers	*Ford Assembly Tables*

Check the items in this list that interest you—write your name and address on the margin of this page and send it to us, and we'll send you our new catalog showing equipment that will help you to build a bigger, better and more profitable business.

Aligning Device

In manufacturing or rebuilding motors it is absolutely necessary that the pistons and connecting rods be accurately lined up if you expect to avoid "stuck" and leaky piston rings, piston slaps and loose bearings.

The Continental Aligning Device makes a test of the piston, piston-pin holes, the holes in the upper rod bearings, lower rod bearings, and the trueness of the rod itself.

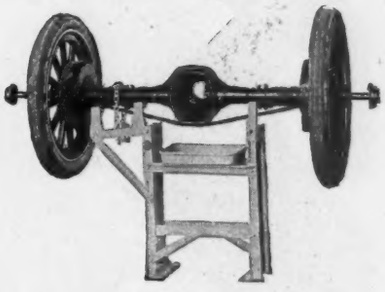
Parts and Tool Tray

Here's your right-hand helper no matter where you are—no matter what kind of work you are doing—you should have the Continental Tray with you. It keeps your tools all together and right with you. The top is of solid metal, and parts can be washed right in the tray.

Straightening Press

The Model 55 Continental Straightening Press is a real heavy-duty machine. It takes care of all kinds of work, from the heaviest requirements of the factory, garage and service station to the lighter and speedier work of light manufacturing.

A Dial Indicator accurately gauges the amount that the shaft is out of line. This gauge is absolutely necessary to efficient work, and since it registers in thousandths of an inch, it shows exactly what you are doing and greatly speeds up your work.



Axle Stand

There is probably no part of a truck or car that is clumsier to work with than the axles.

The Continental Axle Stand solves the question quickly and efficiently.

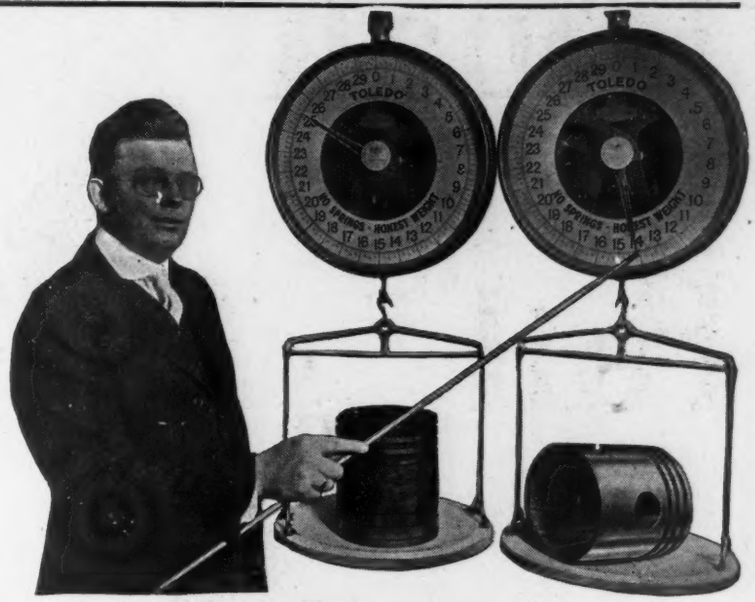
You can place any type of axle, front or rear, in the Continental Axle Stand—tear it down and rebuild it entirely without removing the axle from the stand. The grease pan takes care of the old oil and grease, and the tray is a handy place for tools and wrenches.

See Our Exhibit at the Automotive Equipment Assn. Show, Chicago, Nov. 15-20

Continental Auto Parts Co.

2000 E. 17th St., Columbus, Indiana

"The Efficiency Standard"



Stamey S. Turner pointing out the difference in weight between a large size DE LUXE PISTON and a stock piston of same size

WHY DELUXE

LIGHT WEIGHT GREY IRON PISTON ©

"The Successful Light Weight Piston"

SAVES GASOLINE

De Luxe light weight, grey iron pistons save gasoline simply because they save weight, and with no sacrifice of strength.

It takes less power to move one pound than it does two. De Luxe pistons are

40 to 50% LIGHTER THAN STOCK FACTORY CAST IRON PISTONS,

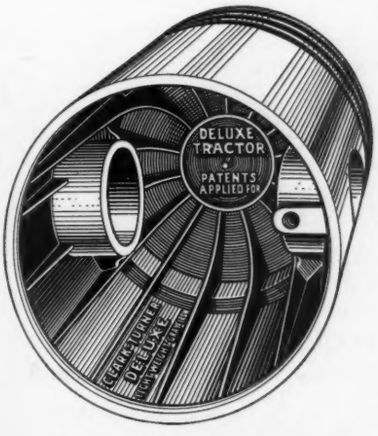
therefore it takes less gasoline to run an engine equipped with them.

De Luxe pistons will easily pay for themselves in the saving of gasoline and oil which they will effect.

And beside this saving they transform a motor's performance—more power and flexibility.

De Luxe pistons installed in the motor of a commercial car will increase its range of operation and cut down the operating expense.

Ask any good automobile mechanic about De Luxe Pistons.



"LOOK INSIDE, YOU CAN'T GO WRONG—VERY LIGHT AND VERY STRONG"

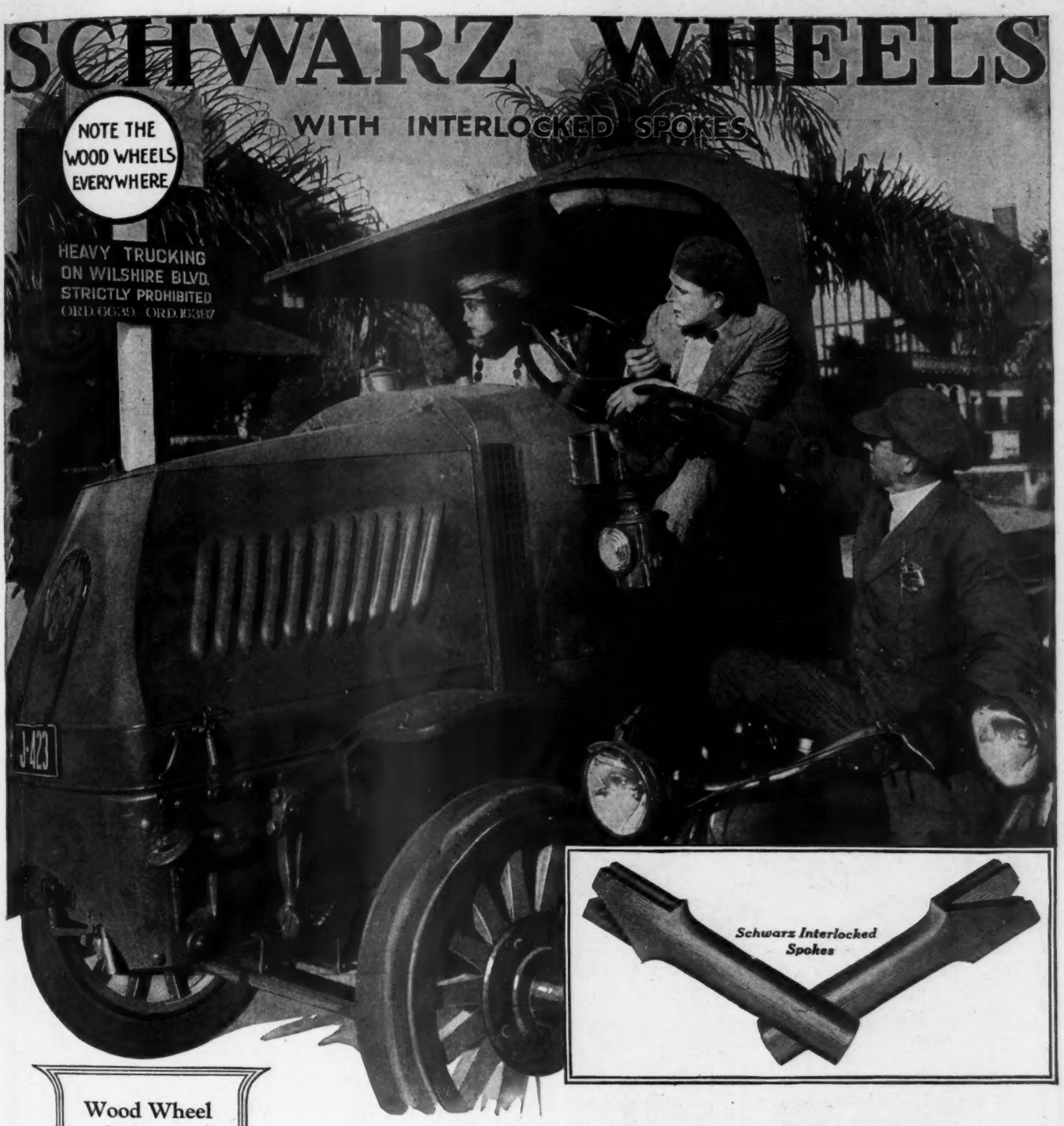
CLARK-TURNER PISTON CO.

1246 So. Los Angeles St. Los Angeles, Cal.

ORDER FROM OUR NEAREST DISTRIBUTOR—LISTED IN CHILTON'S AUTOMOBILE DIRECTORY AND (RED) AUTO TRADE DIRECTORY

SCHWARZ WHEELS

WITH INTERLOCKED SPOKES



Wood Wheel Guarantee

The Schwarz Wheel Company guarantees Wood Wheels of their manufacture for the life of car or truck on which placed.

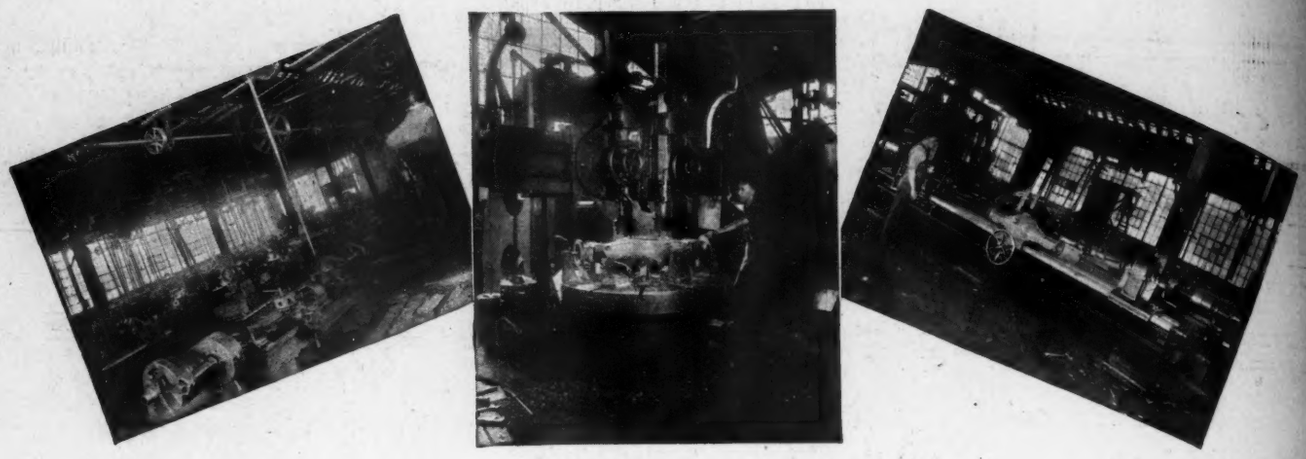
A tribute to the "hard worker"

IN Wallace Reid's latest picture "What's Your Hurry?" a wonderful demonstration is given of truck performance. The scenario is built around the extraordinary performance of a fleet of trucks.

We point with pride to the fact that the directors of Paramount Pictures selected Schwarz Wheel-equipped Macks for this spectacular film. Schwarz Wheels, with interlocked spokes, have the excess strength so necessary for every type of truck and passenger car.

THE SCHWARZ WHEEL COMPANY

FRANKFORD, PHILADELPHIA



Vulcan Motor Axles Are in Production

Three months ago announcement was made of the Vulcan Motor Axle Corporation.

At that time a factory had been acquired and machinery purchased.

It is a pleasure to announce that this large and modernly equipped factory is today in operation.

It is not surprising that these rapid strides have been made. The personnel of the Corporation is composed of men who have been in constant successful association with one another for many years as principals in one of the biggest producing axle concerns. These men know the axle business in such a way as to eliminate any lost motion in manufacturing.

Moreover, these men are intensely gratified at the reception already accorded the Vulcan Axle Motor Corporation. The announcement of an axle concern whose primary functions would be to build better axles, form a dependable source of axle supply and carry on business with the utmost of co-operation and courtesy has found an instant appeal among the users of this equipment.

Vulcan Motor Axle Corporation
Detroit, Michigan

OFFICERS:

FREDERICK C. GILBERT
President and Treasurer

C. C. MILLER
Vice-President

SIDNEY C. LOVE
Vice-President, Sales

JOHN T. HANLON
Secretary

R. B. WEAVER
Vice-President, Production

R. B. BEECHLER
Chief Engineer

Traffic Truck

4000 LBS. CAPACITY

(chassis)
$1595
(factory)

"stands pat"

The Traffic has been, and is, *the lowest priced 4,000-lb. capacity truck in the world.*

Besides the quality which is recognizable by every unit and feature in its entire construction, Traffic dealers have enjoyed the additional advantage of selling a motor vehicle of the standard capacity which has never been burdened with an excess price, inflated or war price.

The remarkably low price for the Traffic has been made possible through quantity production and the standardization of one model of 4,000 lbs. capacity only, meeting 80 per cent of all hauling requirements.

over

Traffic Truck

4,000 LBS. CAPACITY

The Traffic embodies the intrinsic worth for every single dollar paid by the purchaser — it is this value of dollar for dollar that stabilizes and makes for the dealer a sound and permanent business.

The Traffic "stands pat" as the greatest value presented by the truck industry in the past, present and for the future, in price, quality and policy.

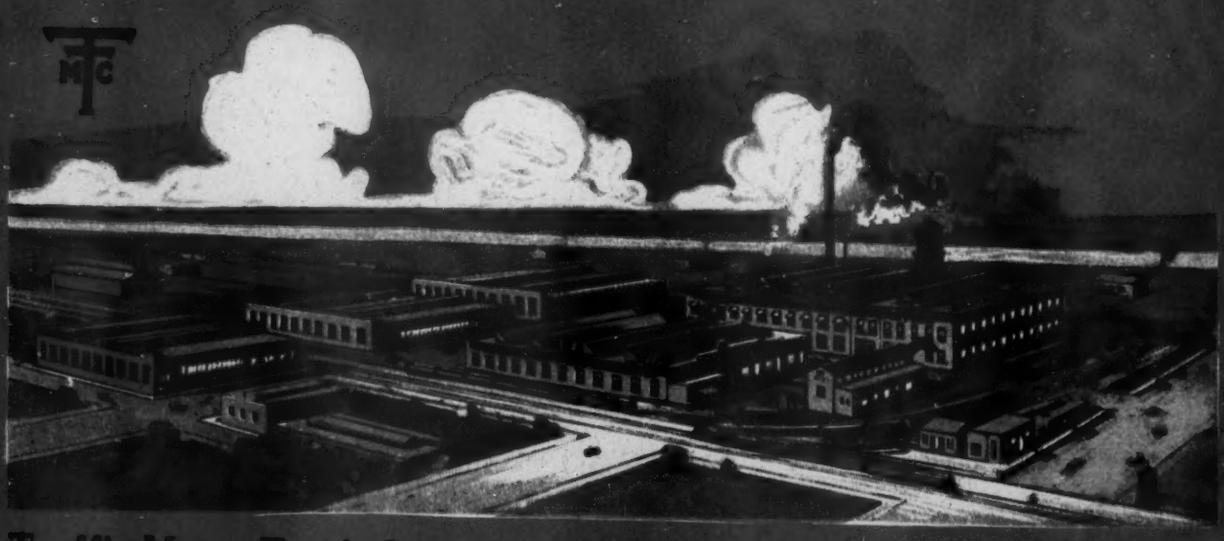
MR. DEALER — The Traffic dealer organization is now being extended. Dealers are lining up for the 1921 Traffic contract — a contract which offers the soundest and most profitable truck proposition in the entire automotive field.

If your territory has not already been closed, you have the opportunity of making a direct factory connection.

Don't write a letter—wire at our expense. Wire today.

Specifications:

Red Seal Continental 3¾x5 motor; ***Covert transmission;*** multiple disc clutch; ***Bosch magneto; Carter carburetor;*** 4-piece cast shell, cellular type radiator; drop forged front axle with ***Timken roller bearings; Russel rear axle,*** internal gear, roller bearings; semi-elliptic front and rear springs; ***6-in. U-channel frame; Standard Fisk tires, 34x3½ front, 34x5 rear; 133-inch wheelbase; 122-inch length of frame behind driver's seat;*** oil cup lubricating system; chassis painted, striped and varnished; driver's lazy-back seat and cushion regular equipment. Pneumatic cord tire equipment at extra cost.



Traffic Motor Truck Corporation **St. Louis, U. S. A.**

Largest exclusive builders of 4,000-lb. capacity trucks in the world.

Mechanical Exactness of Parts Gives Long Life to the Transmission

THE sliding gears of a transmission must *move freely* but *without play*, or they will not operate properly. Even a slight binding on the shaft makes shifting difficult, while a loose fit causes an annoying rattle and uneven wear. Correct operation of Brown-Lipe gears is assured by most careful inspection tests of both shafts and gears.

The above illustration shows a shaft being tested, on table centres, for straightness and concentricity. The inspector carefully watches the gauge needle as he turns the shaft, and only those that meet the most exacting requirements are accepted.

It is to this exact measurement, as well as to excellence of design, material and manufacturing methods that Brown-Lipe transmissions and differentials owe their commanding position.

BROWN-LIPE
CHAPIN
DIFFERENTIALS

BROWN-LIPE GEAR CO.
TRANSMISSIONS

BROWN-LIPE-CHAPIN CO.
DIFFERENTIALS

Both at SYRACUSE, N. Y.

No. 17 of 40 Reasons for Superiority

AN OLD NAME

D U N

IN A NEW FIELD

What will the Dunlop name be worth to a Dunlop dealer?

Judge for yourself from the following facts:

In tire history—Dunlop stands for the first practical and successful pneumatic, invented by John Boyd Dunlop in 1888.

It stands for the foundation of the pneumatic tire industry; it helped to make the motor car practical; it is associated with the commercial development of both the wire bead and clincher types of tires.

In tire manufacture—Dunlop stands for the original and oldest tire building institutions; for one of the largest in the world; for world-wide distribution and world-wide manufacture, with Dunlop tire companies in every quarter of the globe, Dunlop rubber plantations in the Far East, Dunlop fabric mills in both hemispheres.

In America—Dunlop means an American corporation, a tire-building community which, in size, advanced construction, machinery and capacity for output, may be classed with the largest and oldest in the industry. It stands for quality reputation surpassed by none. It stands for only high-grade products—pneumatic cords and tubes for cars, trucks, motorcycles, and solid tires for trucks. It stands for an actual capacity to produce over 12,000 tires a day, and ready increase of that capacity when necessary.

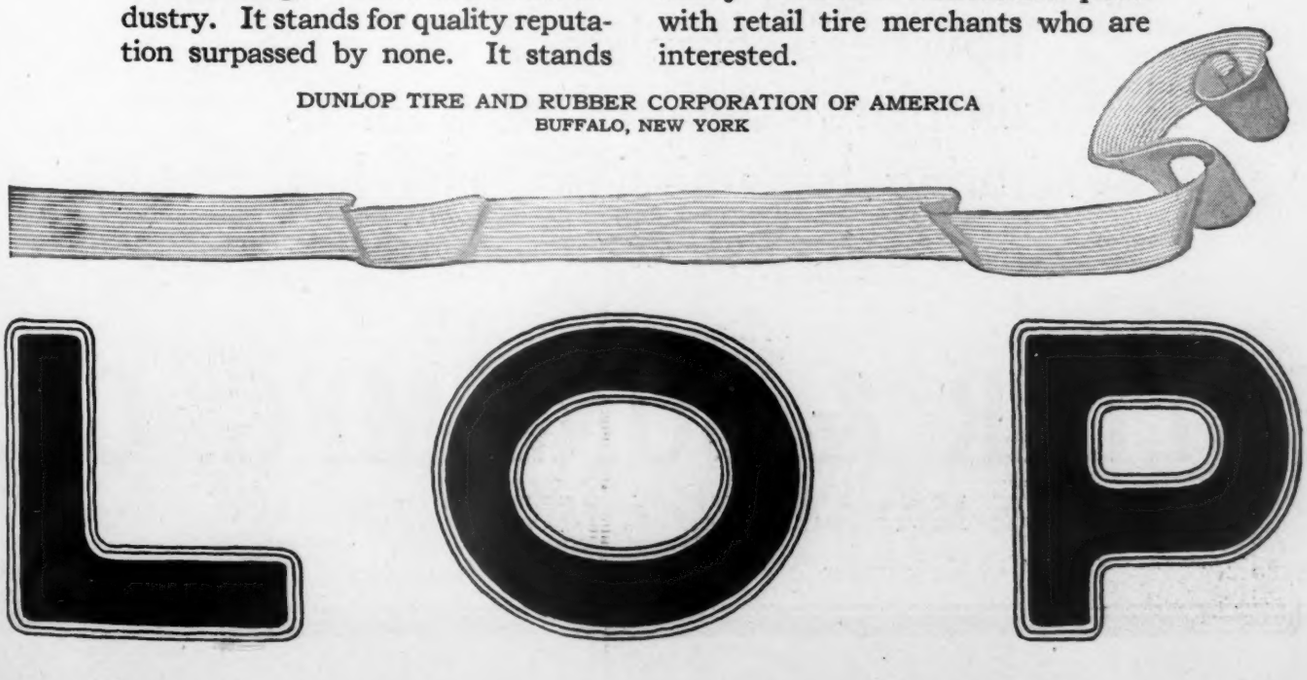
In Advertising—Dunlop means consistent, continuous large-space popular advertising of great extent, a never-relaxing assurance to the dealer of good will in his business.

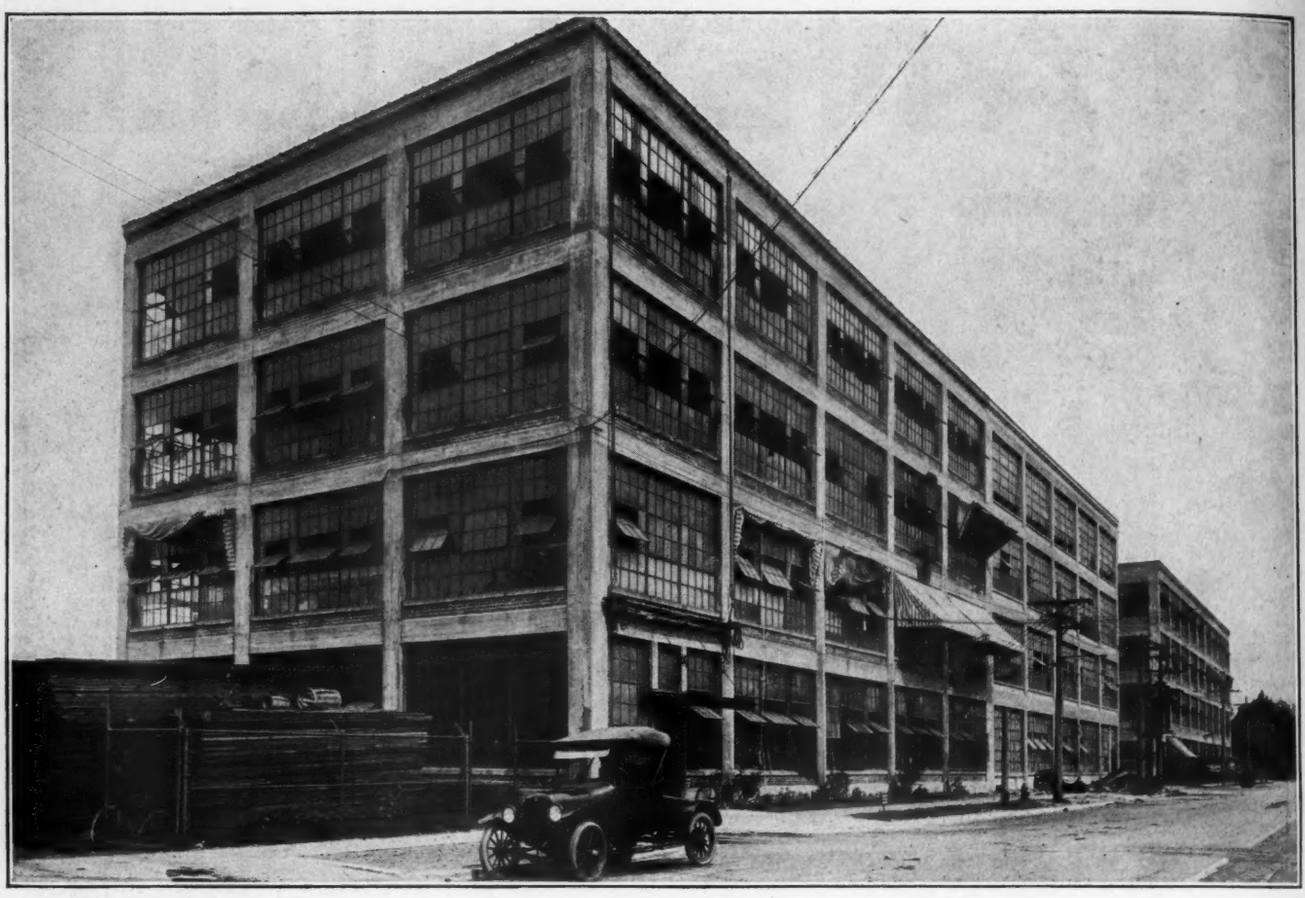
To the tire user—Dunlop will mean the utmost of continuous use in transportation and a responsibility that ends not with the sale, nor with any stated mileage, but with the last day the tire is in service.

To the Dunlop Dealer—Dunlop will mean retail distribution—a policy that allows him to build a permanent business, a belief that he and his customers and Dunlop have mutual interests; and an opportunity worthy of the energy and ability of the very best tire merchants.

Dunlop Tires are not yet for sale—They will be in a few months. Meantime we will welcome the opportunity to discuss distribution plans with retail tire merchants who are interested.

DUNLOP TIRE AND RUBBER CORPORATION OF AMERICA
BUFFALO, NEW YORK





TRANSMISSIONS

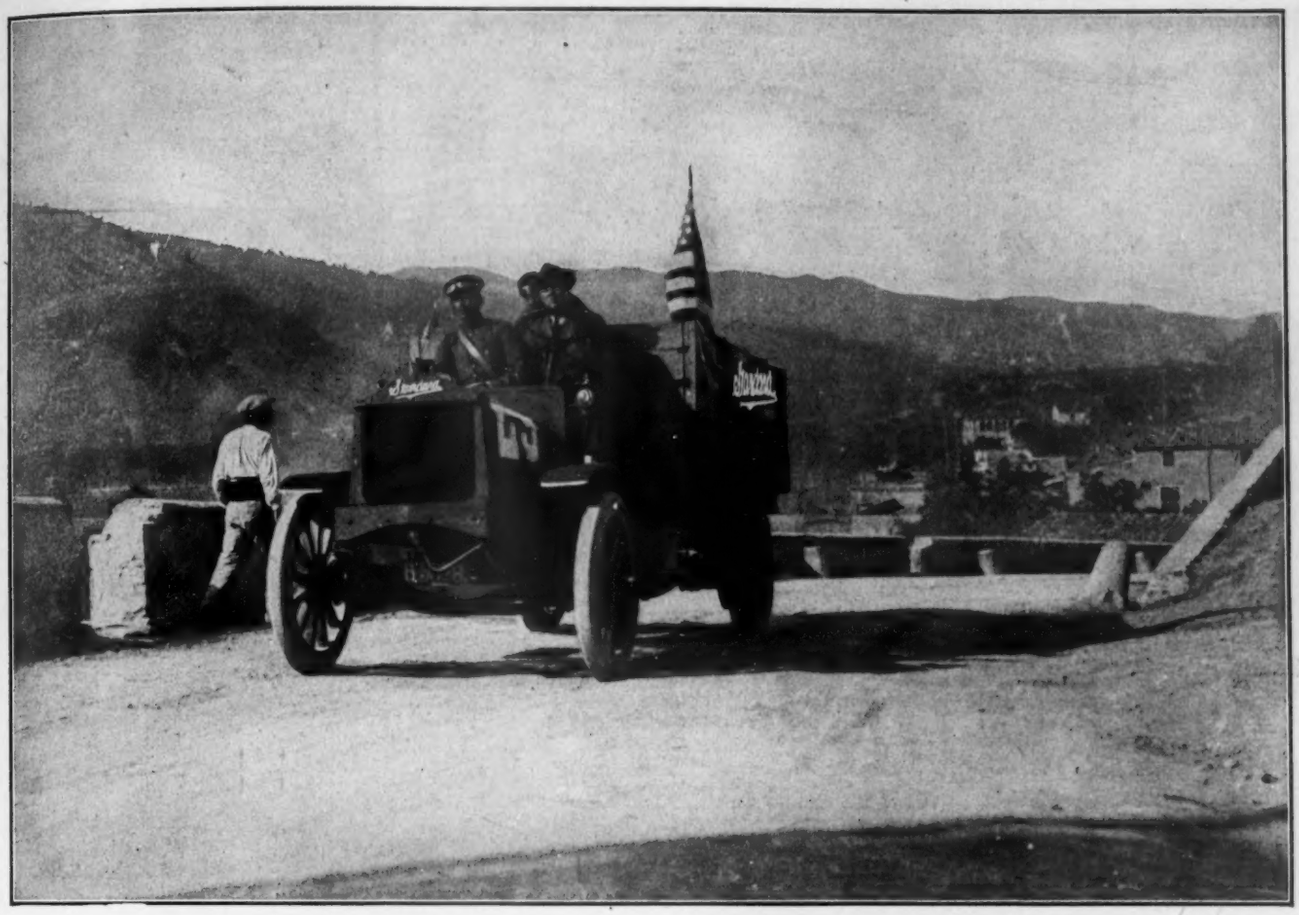
QUALITY Fuller FIRST

THE demand for Fuller Transmissions made it necessary to add another four-story unit, which has now been completed. This entire plant is devoted to manufacturing transmissions, clutches and controls exclusively.

FULLER & SONS MFG. CO.

KALAMAZOO, MICHIGAN

Detroit New York San Francisco London



Wins Gold Medal in Spain

This two-and-a-half ton Standard truck was awarded a Gold Medal at the International Trials held in Barcelona-Madrid, Spain, in competition with twenty-eight of the leading makes of trucks from England, France, Spain, Switzerland, Italy, Germany, and America.

A remarkable victory like this, against the hardest kind of competition, cannot help but emphasize the soundness of the Standard policy, which is to use only parts that are recognized generally as standard in their field, and to build for quality instead of quantity.

The Standard's sturdiness of design and construction, as evident in this contest as when working under the worst hauling conditions, is the result of ten years of improving and developing, in actual use, and twenty years of constructive experience in the building of commercial vehicles.

You would understand why Standard dealers have won the good will of their communities and why they have grown and become prosperous if you knew the splendid record of Standard trucks in every kind of business, the successful history of the Standard institution, and the high character of the men behind it.

Alert, well-established dealers, who have the organization to handle Standard trucks properly, will find it to their advantage to write for available territory.

STANDARD MOTOR TRUCK CO., Detroit, Mich.

Standard MOTOR TRUCKS
DETROIT USA

Here—

Is the list of firms who have met the metallurgical requirements of the association for the quarter ending June 30, 1920, and have received the certificate above. Write them about your next needs.

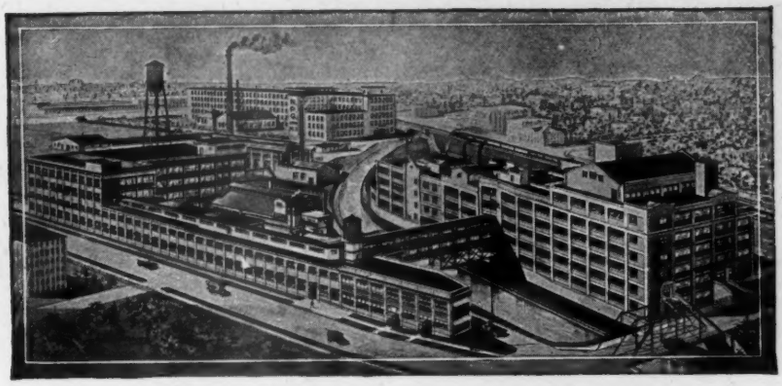
Any serious complaint as to the quality of malleable iron furnished by any of the firms listed will be rigidly investigated if brought to the attention of the association.

Members Receiving Certificates for Quarter Ending June 30th, 1920.

Albion Malleable Iron Co.	Albion, Mich.
American Malleables Co.	Lancaster, N. Y. and Owosso, Mich
Baltimore Malleable Iron & Steel Casting Co.	Baltimore, Md.
Belle City Malleable Iron Co.	Racine, Wis.
Chain-Belt Co.	Milwaukee, Wis.
Chicago Malleable Castings Co.	West Pullman, Chicago, Ill.
Chisholm-Moore Mfg. Co.	Cleveland, Ohio
Columbus Malleable Iron Co.	Columbus, Ohio
Dayton Malleable Iron Co.	Dayton, Ohio and Ironton, Ohio
Devlin Mfg. Co., Thomas	Philadelphia, Pa.
Eastern Malleable Iron Co.,	
Naugatuck Malleable Iron Works	Naugatuck, Conn.
Bridgeport Malleable Iron Works	Bridgeport, Conn.
Troy Malleable Iron Works	Troy, N. Y.
Wilmington Malleable Iron Works	Wilmington, Del.
Vulcan Iron Works	New Britain, Conn.
Erie Malleable Iron Co.	Erie, Pa.
Federal Malleable Co.	West Allis, Wis.
Fort Pitt Malleable Iron Co.	Pittsburgh, Pa.
Frazer & Jones Co.	Syracuse, N. Y.
Globe Malleable Iron & Steel Co.	Syracuse, N. Y.
Haskell & Barker Car Co.	Michigan City, Ind.
Illinois Malleable Iron Co.	Chicago, Ill.
Iowa Malleable Iron Co.	Fairfield, Ia.
Kalamazoo Malleable Iron Co.	Kalamazoo, Mich.
Laconia Car Co.	Laconia, N. H.
Marion Malleable Iron Works	Marion, Ind.
National Malleable Castings Co.,	Cleveland, Ohio, Chicago, Ill., Indianapolis, Ind., Toledo, Ohio, E. St. Louis, Ill.
Northern Malleable Iron Co.	St. Paul, Minn.
Northwestern Malleable Iron Co.	Milwaukee, Wis.
Pittsburgh Malleable Iron Co.	Pittsburgh, Pa.
Pressed Steel Car Co.	Pittsburgh, Pa.
Rockford Malleable Iron Works	Rockford, Ill.
Ross-Meehan Foundries	Chattanooga, Tenn.
St. Louis Malleable Casting Co.	St. Louis, Mo.
Standard Malleable Castings Co.	Terre Haute, Ind.
Stowell Co.	South Milwaukee, Wis.
T. H. Symington Co.	Rochester, N. Y.
Terre Haute Malleable & Mfg. Co.	Terre Haute, Ind.
Union Malleable Iron Co.	East Moline, Ill.
Vermilion Malleable Iron Co.	Hoopeston, Ill.
Wanner Malleable Iron Co.	Hammond, Ind.
Wisconsin Malleable Iron Co.	Milwaukee, Wis.
Zanesville Malleable Co.	Zanesville, Ohio

CERTIFIED MALLEABLE CASTINGS
THE AMERICAN MALLEABLE CASTINGS ASSOCIATION
CERTIFIED

The 1900 Euclid Building, Cleveland, Ohio



The ten-acre plant of the New Process Gear Corporation

Gear Service

Behind the good service that New Process Gears themselves give, there's the larger service—the manufacturing service—that we render to makers of cars, trucks and tractors because we are gear specialists.

This larger service has become possible because we devote our engineering talent and 10 acres of equipment to one thing—precision gear manufacture—and have developed large-scale gear-production as a means of perfecting precision processes.

Better let our engineers confer with you. Possibly a slight change in your gear-dimensions will give you the benefit of our ready-tooled, large-scaled capacity, and *save you money.*

Quality — Quantity — Quickness

New Process Gear Corporation

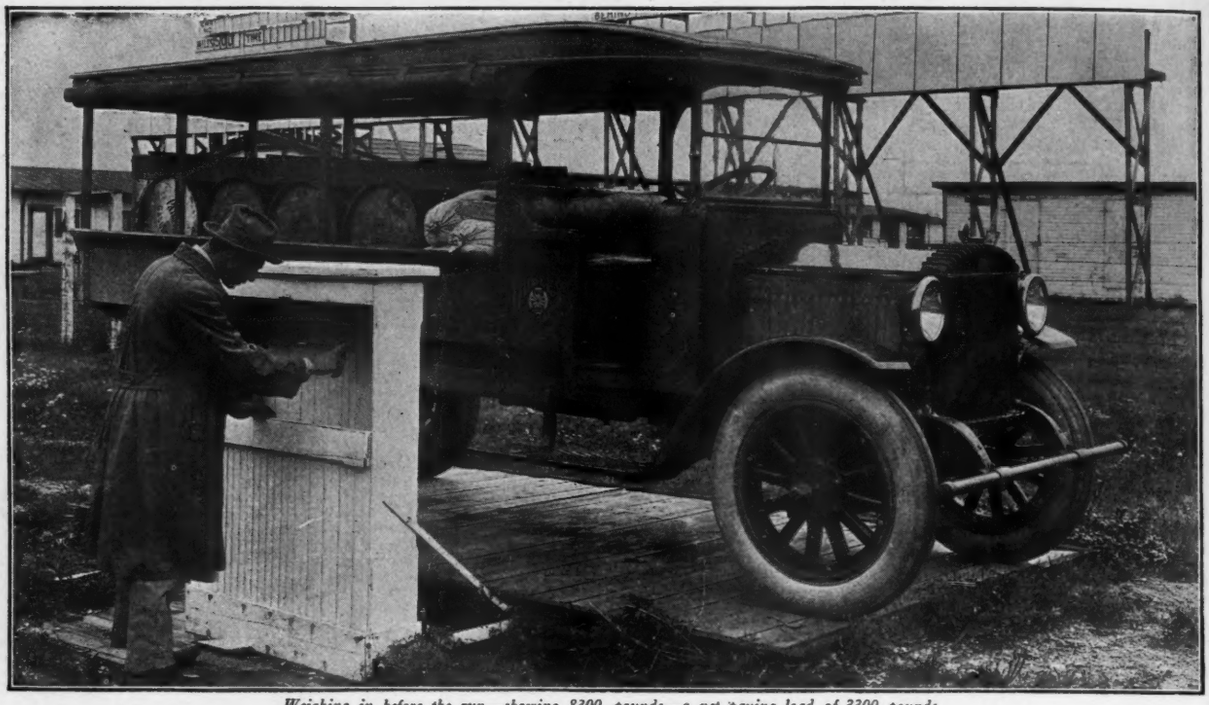
Syracuse *Member of the* **New York**

AGMA

New Process Gears

DUPLEX TRUCKS

BUILT FOR BUSINESS



Weighing in before the run—showing 8300 pounds—a net paying load of 3300 pounds without the drivers. Note the four gasoline drums to avoid stopping for gasoline.

Mr. J. Edward Schipper, Detroit Editor of Automotive Industries, inspecting the Duplex Limited to check it as a stock car.

Each lap was timed by the Speedway Chronometer. At no time did the truck average less than 35 miles per hour or more than 42 miles per hour.

The temporary 28 ft. wooden bridge constructed overnight which the truck passed over more than 400 times during the run.

A World's Record

The Duplex Limited Carrying 3300 Pounds Makes Continuous Run of 935 Miles in 24 Hours At Indianapolis Speedway

No Stops Made For Any Reason During the Run—And Speed At No Time Dropped Below 35 Miles Per Hour or Increased Above 42 Miles Per Hour—Averaging Slightly Better Than 38 Miles Per Hour for the Entire Run

THIS record breaking run of the Duplex Limited—operating 24 hours continuously at 35 to 42 miles per hour—conclusively shows the remarkable ruggedness and stamina of this truck. It lays emphasis anew, and in startling manner, on the value of the principles of Duplex design and construction.

It shows definitely that here is a truck that is really safe for the businessman to buy with the serious expectation of satisfactory service.

The truck was stock throughout—with the exception that there were four drums of gasoline mounted in the body and connected to the carburetor and that the gas tank, ordinarily used for gasoline was used for oil, the lead from the regular gas tank being tapped into the engine filler.

The truck weighed in at 8300 pounds loaded with gasoline, oil and ballast but without drivers. This represents approximately 3300 pounds pay load at the start of the run.

This wonderful run represents approximately the distance between New York and Chicago—and conclusively demonstrates that the modern truck is destined to be a bigger and bigger factor in transportation.

Bear in mind that the run was made without stops for adjustments and with no change of tires and that not only was the engine kept running, but the truck itself never stopped.

DUPLEX FOR BUSINESS

Duplex Truck Company
Lansing • Michigan

One of the Oldest and Most Successful Truck Companies in America

DUPLEX TRUCKS

BUILT FOR BUSINESS

Congratulations at the end. These two drivers undoubtedly rode further in an automotive vehicle on land than mortal man ever did before in a continuous run.

Now is the Time to Begin to Get the Real Facts About This Remarkable Duplex Limited Before Customers

Remember! Businessmen All Over America Are Looking More Seriously Than Ever For Real Truck Value—And Here In This Duplex Limited You Have a Truck That Can Stand The Very Closest Inspection

THERE never was a time in the history of American business when truck transportation was so much a factor as it is today—nor when trucks are being so closely scrutinized.

Here is a situation exactly made to order for the Duplex Limited—because the more a man knows about it, the further he looks into it and the closer his comparison of the Limited with Trucks generally—the more the Duplex Limited will sell itself to him.

Right in your territory there are men who need this Duplex Limited—who need and want its all round dependability and its undoubted economy.

This class of businessmen constitutes perhaps 75 per cent of the truck field—for this Limited is specifically a truck for general business purposes.

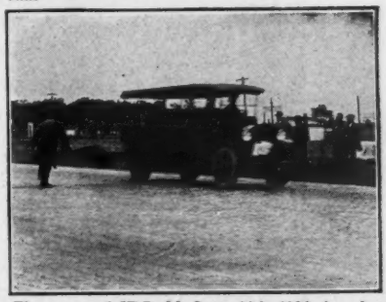
Get the facts before your prospects—invite them to make any comparison they want—because on the basis of facts this Duplex Limited stands head and shoulders above the average.

This run is a world record—second in importance only to the records being made every day by the Duplex Limited in actual business use.

Businessmen in your territory want to know the truth—tell it to them.

Duplex Truck Company
Lansing · Michigan

One of the Oldest and Most Successful Truck Companies in America



The start at 1:57 P. M. Sept. 30th, 1920, for what was destined to be a world's Record Run—never attempted before by any truck.

Hot coffee was passed the drivers at intervals during the run. Neither man left the truck at any time.

The finish at 1:57 P. M. Oct 1st, 1920, after 935 miles continuous operation—the first time in American Automotive history that a motor propelled vehicle kept going for 24 hours consecutively.

GRAHAM BROTHERS
1½ TON SPEED TRUCK

Graham Brothers 1½-ton Speed Truck is unusually good for the dealer.

First, it is built with all the care and thoroughness that have always gone into Graham Brothers products.

Second, it is the size that meets full 70 per cent of all trucking needs.

The experience of Graham Brothers dealers everywhere bears out what we have just said.

The truck sells. It stays sold. It does the job—easily, quickly, satisfactorily, and at low cost. It makes friends, and stays friends, with its owners.

Durability is built into the Speed Truck. It doesn't wear itself out quickly, because the Speed Truck chassis is built of fine materials and is 500 to 1000 pounds lighter than most trucks.

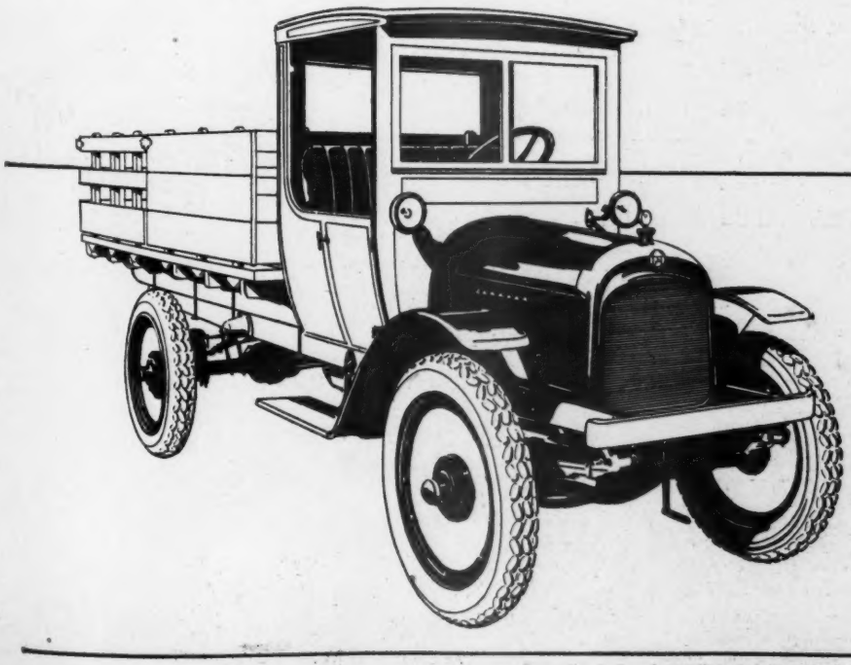
Nearly all Speed Trucks are equipped at the factory complete with bodies and cabs. Years of experience have taught Graham Brothers the practical needs of every business, so that more than 90 per cent of all truck requirements are answered by the various styles built and sold on Speed Truck chassis.

The Speed Truck has been designed, particularly and primarily, to run on pneumatic tires. Its construction throughout is marked by sound, foresighted engineering. Its equipment includes Disteel Wheels, and such additional features as electric lights, odometer, motometer and engine-driven tire pump.

In a few words, this is an honest truck, honestly built for rugged service — a truck a dealer can stand back of with all his business sincerity.

Graham Brothers will be glad to hear from all who are interested in having complete specifications of the Speed Truck and details of their sales policy.

GRAHAM BROTHERS
Plant and Offices: **Evansville, Ind.**



GRAHAM BROTHERS
EVANSVILLE, INDIANA, U.S.A.

All for every requirement

"My Mack trucks, loaded to the top, frequently come up the Montgomery Street Hill—a grade of about 25 per cent. I am now figuring on a contract that will require ten more 7½-ton Macks, which will bring my total fleet up to twenty."—*From one letter of hundreds we should like you to read.*

THE Mack motor has sufficient reserve power for work far in excess of normal requirements. In the 3½ to 7½ ton models, the bore is 5" and the stroke 6". While rated at 40 H. P. it has developed 74 H. P. on 100-hour continuous brake tests. It has a three-point suspension and is easily demounted.

Distinctive Mack engineering features, combined with 18 basic Mack patents, have developed the motor truck the world is talking about.

Capacities 1½ to 7½ tons. Tractors to 15 tons.

Our latest catalogues, Nos. 13 and 39, contain a detailed description of the many exclusive features that have made Mack supremacy possible, together with the complete specifications of every model. Send for them today.

INTERNATIONAL MOTOR COMPANY, NEW YORK

"PERFORMANCE COUNTS"

New flexible fabric joint fast replacing metal universals

JERKS and rattles, backlash, loss of power, shocks that rack a car—every motorist has experienced these troubles—common results from the use of metal universal joints.

The unyielding metal-to-metal wearing surfaces transmit all the racking blows to the rear axle, causing severe wear and tear on the gears, bearings and differentials.

To eliminate these troubles caused by metal joints over fifty leading manufacturers have adopted the Thermoid-Hardy Universal Joint as standard equipment. On many of these cars it has run 60,000 miles without replacement or adjustment.

The patented fanwise construction, which gives the Thermoid-Hardy flexible fabric discs their great strength.

How the new universal joint cushions the shocks

Built of flexible fabric discs, which act as cushions in the drive-shaft, the Thermoid-Hardy Joint absorbs the blows that rack the vital parts of the car. It transmits a smooth, even flow of power to the rear axle. The car starts smoothly and runs without backlash, jerks or rattles.

Having no metal-to-metal wearing surfaces, the Thermoid-Hardy Joint needs no lubrication. It cannot wear loose.

On many passenger cars as well as heavy-duty trucks it has run 60,000 miles without replacement or adjustment of any kind. Over fifty manufacturers have adopted the Thermoid-Hardy Joint as standard equipment.

Enormous strength of the flexible fabric joint

The patented fanwise construction of the flexible fabric discs gives the Thermoid-Hardy Universal Joint its extraordinary strength. This unique construction, shown below, is the only way in which uniform strength and elasticity can be obtained.

Your customers will be quick to appreciate the advantages of the Thermoid-Hardy Joint on their trucks.

Send for advance proofs of the national advertising campaign and our new book, "Universal Joints—Their Use and Misuse." The book will give you in detail the construction of the Thermoid-Hardy Joint, records of performance, opinions of leading engineers and manufacturers who have adopted it.

THERMOID RUBBER COMPANY

Sole American Manufacturers

Factory and Offices: Trenton, N. J.

New York Chicago San Francisco Detroit
Cleveland Atlanta Philadelphia Pittsburgh
Boston London Paris Turin

LIST OF USERS

American-British Mfg. Co.
Anderson Motor Co.
The Autocar Company
Available Truck Company
Barley Motor Car Co. (Roamer)
Briscoe Motor Corp.
Capitol Motors Corp.
James Cunningham Son & Co.
Crow-Elkhart Motor Co.
Dart Truck & Tractor Corp.
Diamond T Motor Car Co.
Doane Motor Truck Co.
Fageol Motor Car Co.
H. H. Franklin Mfg. Co.
Garford Motor Truck Co.
Gramm-Bernstein Motor Truck Co.
Hendrickson Motor Truck Co.
Holt Mfg. Co.
Indiana Motor Truck Co.
International Harvester Co. of A., Inc.
International Motor Co.
Ky. Wagon Mfg. Co. (Dixie Flyer)
King Motor Car Co.
King Zeitler Co.
Larrabee-Deyo Motor Truck Co., Inc.
Lexington Motor Co.
Locomobile Co. of America
Maxwell Motor Corp.
Menominee Motor Truck Co.
Mercer Motors Co.
Moreland Motor Truck Co.
McFarlan Motor Co.
Nelson & LeMoon
D. A. Newcomer Co.
E. A. Nelson Motor Car Co.
Nelson Motor Truck Co.
O'Connell Motor Truck Co.
Oliver Tractor Co.
Oneida Motor Truck Co.
Packard Motor Car Co.
Parker Motor Truck Co.
Patriot Motors Co.
Phelps Light & Power Co.
Reliance Motor Car Co.
Reo Motor Car Co.
Reynolds Motor Truck Co.
Root & Van Devoort Engineering Co.
Sanford Motor Truck Co.
Service Motor Truck Co.
Stoughton Wagon Co.
Studebaker Corp.
Templar Motors Corp.
Tioga Steel & Iron Co.
Tow Motor Co.
Traffic Motor Truck Co.
Transport Truck Co.
Twin City Four Wheel Drive Co., Inc.
Walter Motor Truck Co.
Ward-LaFrance Truck Co., Inc.
Watson Products Corp.
Wichita Motors Co.
H. E. Wilcox Motor Co.
J. C. Wilson Co.
Willys-Overland Co.

THERMOID-HARDY
UNIVERSAL JOINT

Fanwise construction for strength

Makers of "Thermoid Hydraulic Compressed Brake Lining" and "Thermoid Crolide Compound Tires"

Trade-Mark
Reg. U. S. Pat. Off.

BOSCH

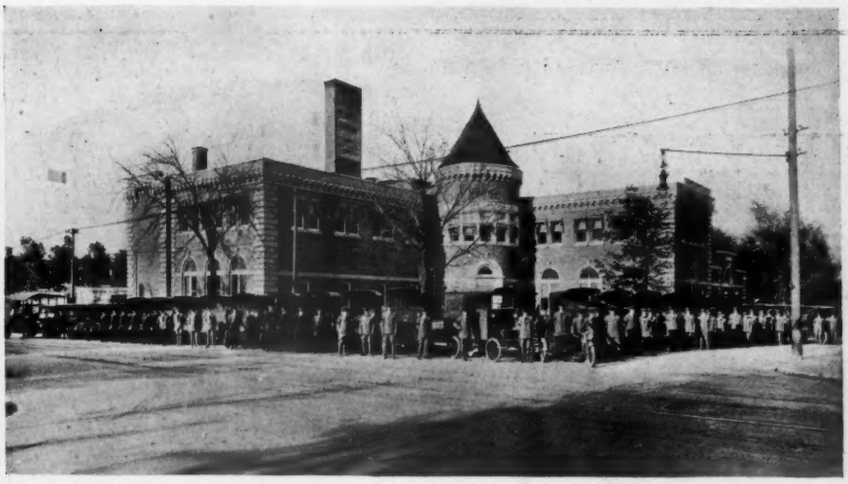
IGNITION CAN BE A

A Motor Truck is easier to sell if it has Bosch Magneto Ignition.

Truck owners and drivers everywhere recognize in Bosch an ignition system which insures the greatest possible power, efficiency and dependability in an engine, therefore, when they see a truck Bosch-Equipt, they accept it as a thoroughly dependable product.

Don't curtail sales by handling a truck with ignition which buyers either do not know or do not trust.

AMERICA'S SUPREME
MOTOR TRUCKS - TRACTORS - AIRPLANES - MOTOR CARS



Do Re-orders Approximate 75% of YOUR Truck Sales?

Re-orders of Ward Electrics approximate 75% of our total business. Can you show anything like as large a percentage of re-orders in the total volume of *your* gasoline truck sales?

The reasons for this extraordinary showing are perfectly plain to the thoughtful dealer who studies the individual transportation needs of his customers.

Such a dealer fully realizes these facts: The gasoline-driven truck is most suitable for long-distance hauling, the Ward Electric for short-haul, frequent-stop deliveries.

He knows that when he sells Ward Electrics to such businesses as department stores, florists, dairies, groceries, laundries, bakeries, etc., his customers' cost sheets will invariably show the following:

750 Lbs. to 5 Tons Capacity

A power cost of approximately one cent a mile for our Ward Special. (Electric current is cheap—and the engine automatically stops when the truck stops.) A daily, frequent-stop delivery run up to 45 miles on a single charge. (Under some conditions the Ward single-charge capacity is much more than that, but we do not advise longer runs.) An insignificant repair bill. (Even pull, lack of vibration, simple, fool-proof mechanism are some of the reasons the Ward seldom sees the repair shop.)

When the Ward owner proves these facts to himself he naturally re-orders other Wards as his delivery requirements increase.

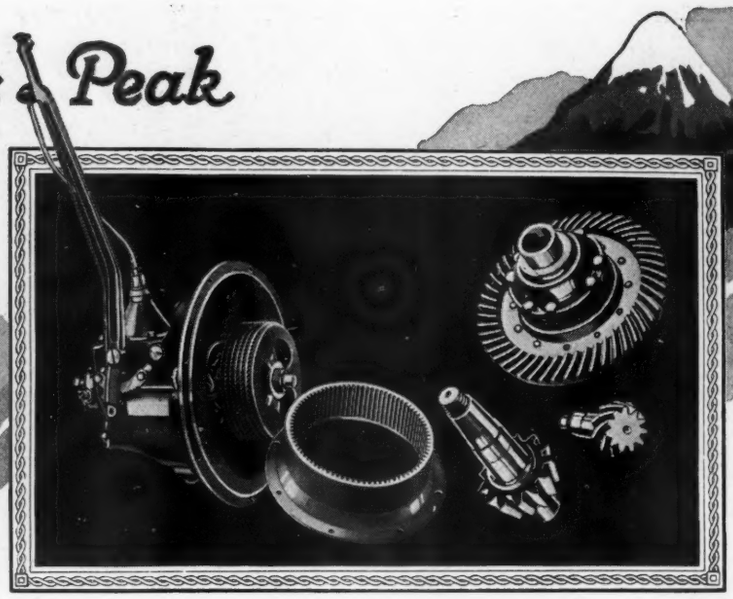
Wouldn't you like to approximate 75% on re-orders for frequent-stop delivery cars? *Write us for full details.*

Ward Motor Vehicle Co.

MT. VERNON, N. Y.

WARD ELECTRICS

In the Pikes Peak Hill Climb—



AGAIN WARNER GEARS WIN

IN carrying the two Lexingtons across the finish line ahead of the entire field in the Pikes Peak Hill Climb, Warner Gears again proved their great reserve of strength and safety.

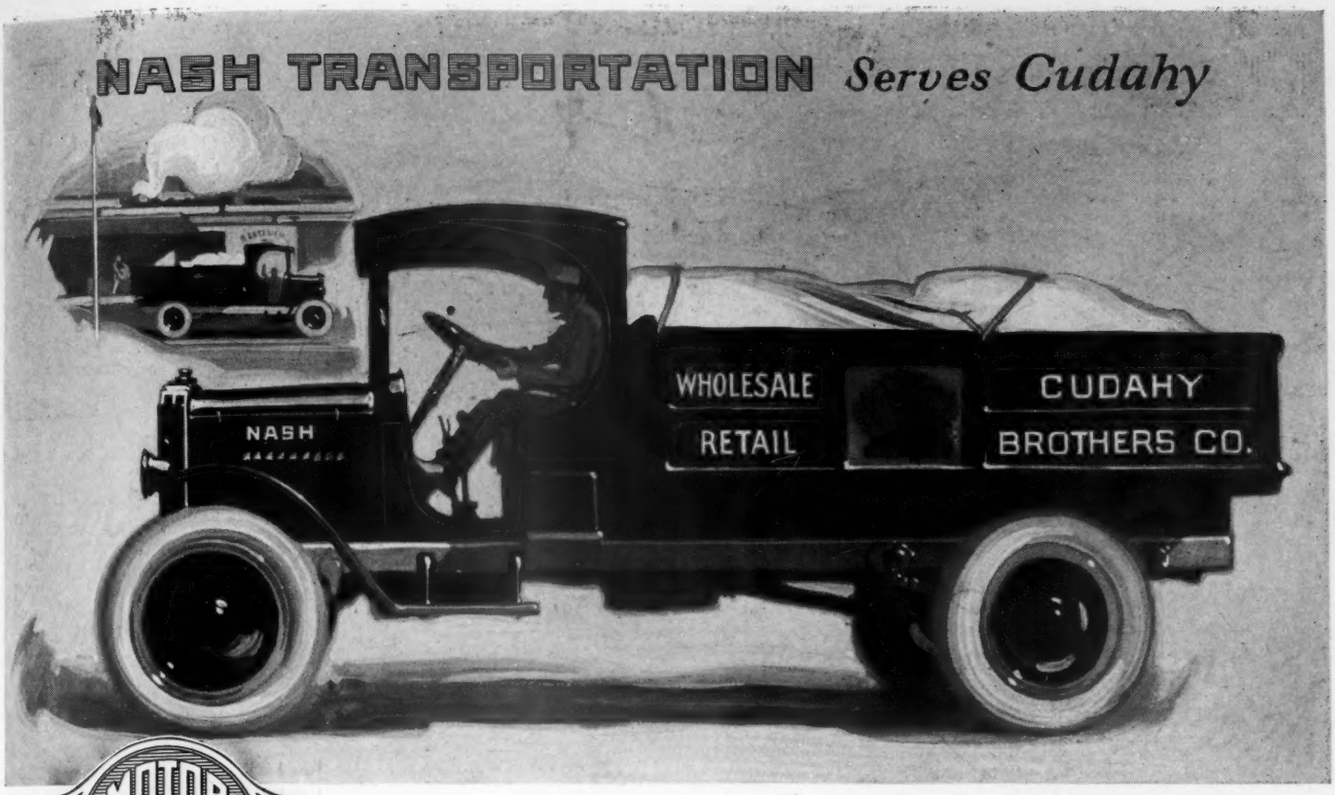
They meshed power with traction under brutal stress, strain and impact—an example of the predominant worth that is today essential to the success of every automotive manufacturer.

For the makeshift car is doomed. Only long life and protracted service meet the new standards of public requirement.

Economy is the watchword and economy demands endurance. Warner Gears give that outstanding guarantee.

WARNER GEAR COMPANY

MUNCIE INDIANA



MOTOR NASH TRUCKS

Among the many large and well-known institutions that find Nash Trucks a paying investment is Cudahy Bros. Packing Company

Nash Trucks Protected by Nash Resources

NASH TRUCKS are built by one of the strongest institutions in the automotive industry.

The Nash factory, at Kenosha, covers more than 101 acres, employs more than 5,000 men and its machine equipment is most modern and complete.

No motor truck manufacturer is stronger financially.

Owners of Nash Trucks know that their investments are protected because these trucks are built and their performance backed by the Nash institution.

Nash Trucks: One-Ton Chassis $1895 Two-Ton Chassis $2550 Nash Quad Chassis $3250

The Nash Motors Company, Kenosha, Wisconsin

Manufacturers of Passenger Cars and Trucks, Including the Famous Nash Quad

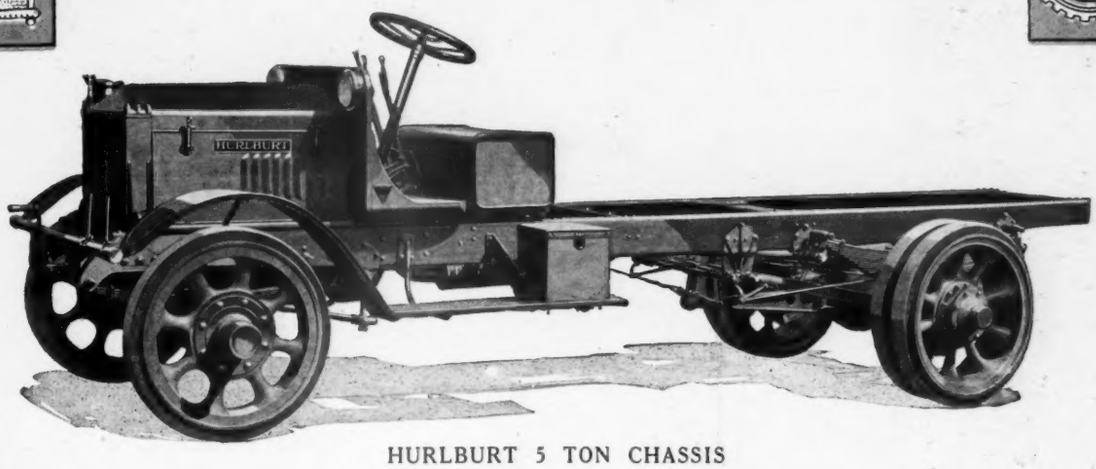
Nash Motor Sales, Ltd., Toronto, Ont., Distributors of Nash Cars and Trucks for the Dominion of Canada

NASH MOTORS


THE SATURDAY EVENING POST
When You See
a Truck with these Torpedo-Shaped Hub Caps
It has Sheldon Axles! The axles
built on the locomotive axle prin
ciple of widely-spread bearings
the axles with worm gear dr
and ball bearings that never need
adjustment during the entire life
of the truck. Made for trucks
from ½- to 5-ton capacity.
SHELDON AXLE & S NG COMPANY, Wilkes-Barre, Pa.
Manufacturers of Sheldon Axles for M Trucks and Sheldon Springs for Automobiles and Trucks
Sheldon
AXLE
FOR MOTOR TRUCKS

HURLBURT

A Conservative Truck



HURLBURT 5 TON CHASSIS
(Wood wheels are standard equipment)
Also made in 1½, 2½ and 3½ ton sizes

THE HURLBURT TRUCK was designed to furnish dependable transportation at a minimum cost and over a maximum period of years. No material and no part which goes to make it up has ever been one whit less than the best that could be bought or made.

The Hurlburt Truck is sold on a quality basis solely, because the way in which they are built puts them out of competition with cars selling on a price basis.

Dealers selling the Hurlburt Truck are ones who have handled merchandise of like quality—whose manufacturing and sales policies have been solid, conservative and lasting.

There is room for the Hurlburt Truck in territories where we now have no dealer representation. If you can prove to us that your territory is of this sort, and that you are a dealer who has been selling on this basis, we invite you either to write us or to call for a personal conference.

Harrisburg Manufacturing & Boiler Co.
Harrisburg, Pa.

(OVER)

HURLBURT

A Conservative Truck

The Vacuum Oil Company owns one of the many Hurlburts which have given continuous service for more than 100,000 miles. The first Hurlburt Trucks were built nine years ago; and today they are still doing their daily work in the cities of heavy trucking in eastern United States and in seventeen foreign countries.

A PIONEER in the worm-drive field and proved by nearly a decade of use, the Hurlburt Truck is solidly past any stage of change or experimentation.

Hurlburt long life is due to the elimination of vibration, back-lash, and the other sources of wear and loss of power.

Hurlburt engineering has demanded standardization—the use of standardized materials manufactured by specialists in each particular field. It has demanded a high factor of safety in all units, more particularly in the power plant and all driving parts. It has demanded that the driving force be applied in a straight line from crankshaft to rear axle. It has also demanded that all units be instantly accessible without disturbing others, making repairs and overhauling as inexpensive and as prompt as possible.

The result is a truck which can be depended on to furnish transportation of a better sort at a lower cost under all conditions of load and traffic.

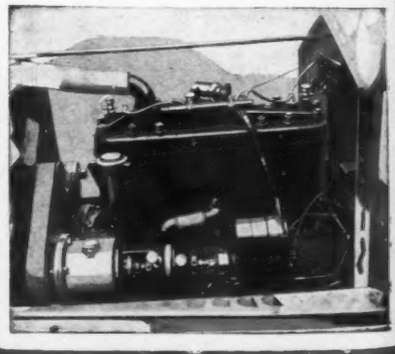
Under the Hood—a Clean Assembly

3½ and 5 Ton Specifications:

1. Buda YTU Motor, 4 cylinder, with detachable head; 4½" bore, 6" stroke, developing 40 horse power.
2. Eisemann High Tension Magneto with impulse starter.
3. Fletcher Carburetor, float feed, with hot spot manifold.
4. Duplex Governor, all connections enclosed.

Harrisburg Manufacturing & Boiler Co.

Harrisburg, Pa.



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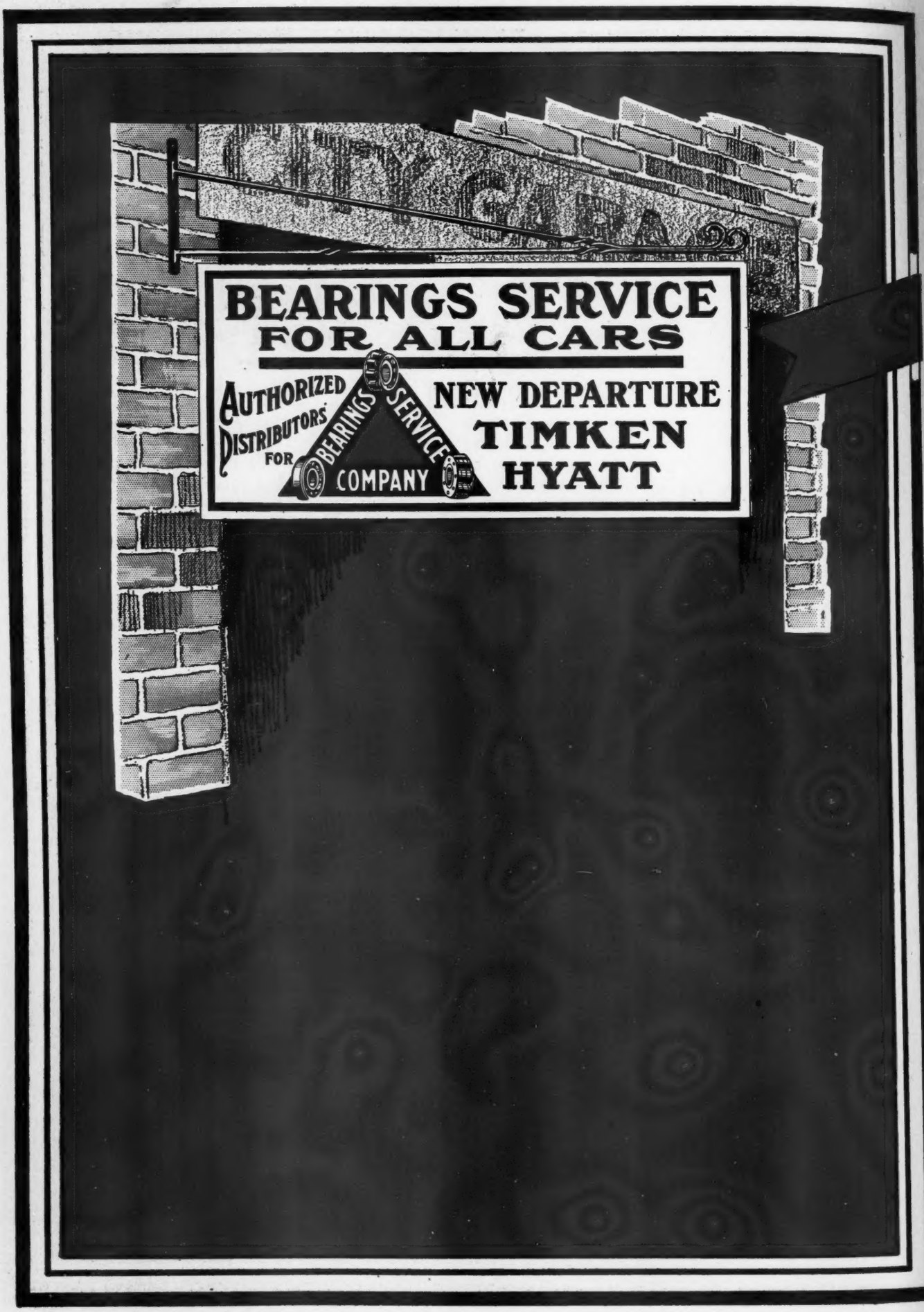

BEARINGS SERVICE
FOR ALL CARS
AUTHORIZED DISTRIBUTORS FOR
BEARINGS SERVICE COMPANY
NEW DEPARTURE
TIMKEN
HYATT

Arm MOTOR

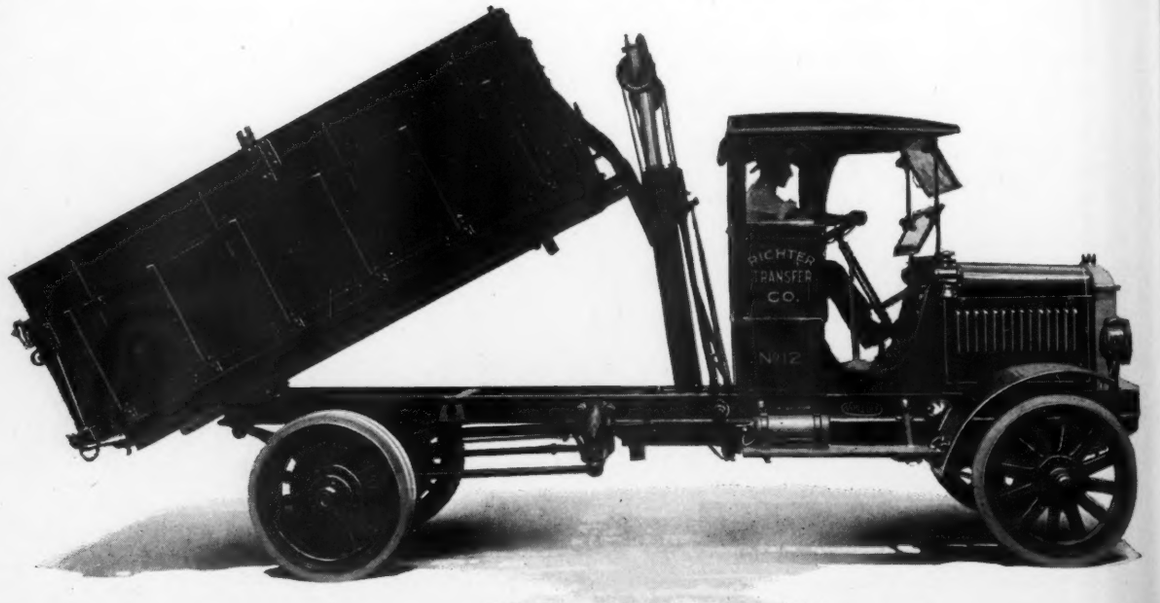
Are Their Own

Incorporated in the Armleder are many patented and exclusive features of construction which other trucks do not and cannot have. It is these features of superiority, combined with the use of only the best materials and workmanship, that make Armleder Motor Trucks stand apart from and above all others.

The Armleder is scientifically designed and engineered. It is a built truck, not one which is put together in the quickest possible way in order to obtain big production without regard to quality. Every unit that goes into an Armleder is thoroughly inspected and tested beforehand. Then each truck is thoroughly tested after it is completed.

These are some of the reasons why Armleder Motor Trucks have won such a wonderful reputation for satisfactory performance that they are the talk of motor truck owners everywhere.

Write for Booklet, "Exclusive Features of Decisive Superiority."



leder

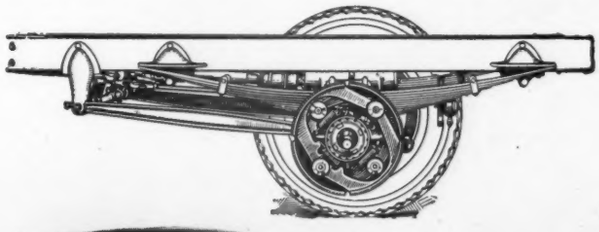
TRUCKS

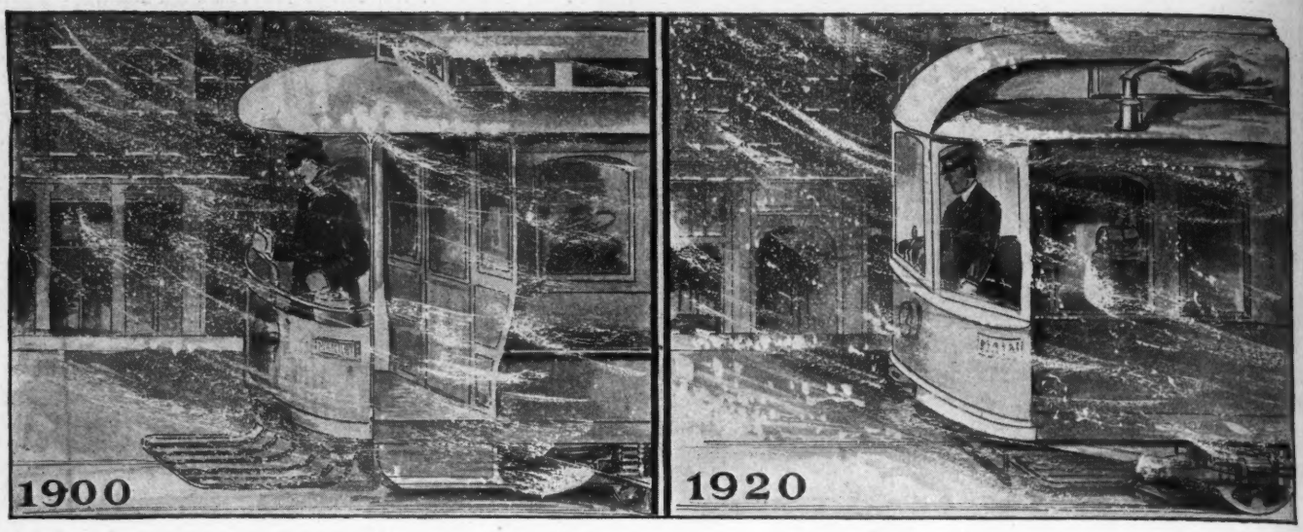
Best Advertisement

THE SPRINGS are only one of the many patented features used exclusively in Armleder Motor Trucks. There are no shackles nor shackle bolts; about 48 wearing parts are eliminated; each leaf is made of triple heat-treated Vanadium steel; pads between springs and axles are machined, set in lead, air and water tight; held by strong U-bar clips, they will not loosen; they are 64 inches long and shorten 16 to 20 inches under load; without load weight rests on tips of springs· with load weight rests 8 to 10 inches from the ends of the springs; they ride like touring cars; reduce gasoline and upkeep costs; increase life of tires and truck.

The O. Armleder Co. Cincinnati, Ohio, U.S.A.

1, 2½ and 3½ Ton Models. Worm Drive





Which motorman is the most efficient operator?
Which will give the best service to his employer?
Which is likely to stick to his job the longest?

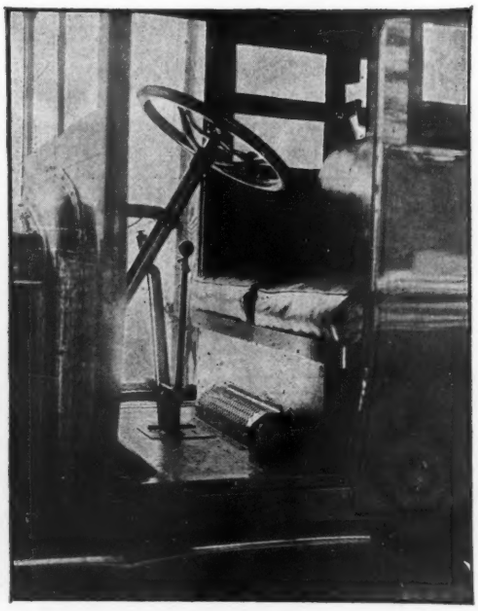
ARE MOTOR TRUCK DRIVERS LESS HUMAN THAN MOTORMEN?

Type "DWS" Heater in Truck Cab

Install Perfection Motor Car Heaters in your truck cabs and the drivers will be comfortably warm regardless of weather conditions.

The results will show in improved winter delivery schedules and lower operating costs. Drivers will be more contented and give a better day's work.

Perfection Heaters pay for themselves over and over again. Easily installed. Utilize exhaust gases. No operating expense.



Type DWS Heater In Truck Cab

PERFECTION MOTOR CAR HEATERS

"The Heat is There ---Why Not Use It?"

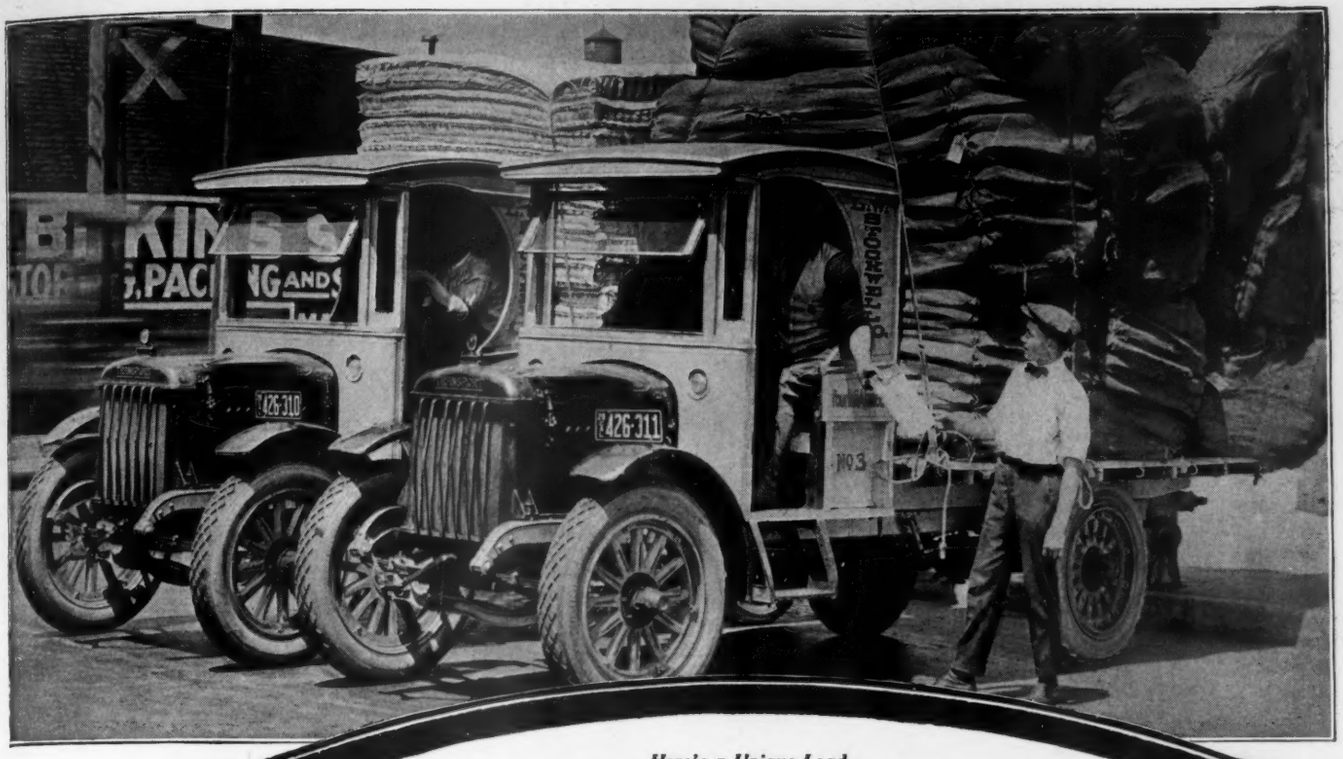
Manufacturers: When you equip your trucks with Perfection Heaters you give your dealers an effective "selling feature." Our engineering department will assist in formulating the most economical installation plan.

The Perfection Heater & Manufacturing Co.

6552 Carnegie Avenue **CLEVELAND, OHIO**

The Only Exhaust Heater (All Models) Tested and Approved by Underwriters' Laboratories

Manufactured and Sold in Canada by Richards-Wilcox Canadian Company, Ltd., London, Ontario



Here's a Unique Load.
Shows the Wide Range of Transport Service.

Where Do Transports Sell Best?

On the farm. In the city. Wherever hauling is done. Every truck buyer in your community is a logical Transport prospect. There is a Transport model for all.

Transport's sturdy, clean-cut appearance and dependable performance win instant approval from farmer, expressman, retailer, wholesaler, manufacturer, contractor and road builder.

They like its character—they appreciate its value—they know its record of achievement. In its many refinements—exclusive Automatic Lubricating System, Impulse Starter, Hot Spot Manifold, Perfected Governing and Control—they see a big saving in time, money and work.

As a Transport dealer you will have this big, ready market before you. With one of the largest truck companies to back you, with a full line of quality trucks, and a helpful service gained through long experience.

Write us for full information about your territory.

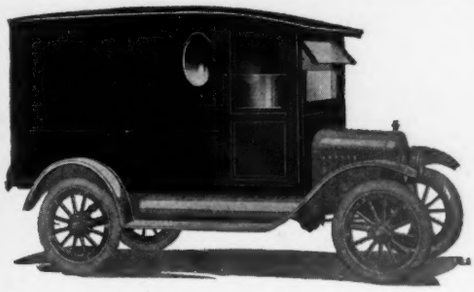
TRANSPORT TRUCK COMPANY, Mount Pleasant, Michigan
Builders of "The Frictionless Truck"

Four models for 2000, 3000, 5000 and 7000 lb. service.
Pneumatic tires optional at extra cost on all models.

TRANSPORT
INTERNAL GEAR DRIVE TRUCKS

Martin-Parry Commercial Bodies

Martin-Parry Body No. 454 C.--a Vestibule Panel Body for the Ford Truck Chassis



Martin-Parry Body No. 201 C.---a Vestibule Panel Body for the Ford Model "T" Chassis.

Good Profits This Winter Selling These Panel Bodies

Dealers find the Martin-Parry line is highly profitable for winter business because it includes a number of bodies that sell especially well during the cold weather season.

These two attractive bodies, afford dealers a splendid opportunity to keep sales at top notch. With their handsome "Vehisote" side panels, enclosed vestibule fronts, sturdy construction and lasting finish they make a strong, instant appeal to the body buyer.

The inclosed cab provides perfect comfort for the driver in winter, yet is easily adjusted to open style for summer service.

Built to Martin-Parry quality standards throughout, these models are known in the trade as two of the best selling panel bodies on the market.

Two large factories with distributing facilities throughout the country, insure dealers everywhere immediate shipments. Write, wire or phone your orders to our nearest plant or distributing point.

Reduced Prices
Increased Production
Immediate Shipments

DISTRIBUTING POINTS

Atlanta, Ga.	Martin-Parry Corp.
Boston	Martin-Parry Corp.
Buffalo	Martin-Parry Corp.
Chicago	Martin-Parry Corp.
Denver	Auto Equipment Co.
Detroit,	Schoof-Gracey Body Co.
Duluth, Minn.	Foster Motor Co.
El Paso,	Tri State Access. Corp.
Kansas City	Henry Seested
Memphis	Universal Motor Car Co.
Milwaukee	Wis. Body & Sales Co.
Minneapolis	Northwest Body Co.
New York	Martin-Parry Corp.
Oklahoma City	H. N. Knight Sup. Co.
Pittsburgh,	Pittsburgh Com. Body Co.
Richmond, Va.	Benj. T. Crump Co.
St. Louis	Bailey Auto Body Sales Co.
San Francisco	Flynn & Collins
Seattle	Commercial Body Co.
Spokane, Wash.	Universal Auto Co.

Martin-Parry Corporation

The Largest Commercial Body Builders in the World

York, Penna. *—Main Offices and Factories—* **Indianapolis**

Prevent This

by Installing Gill One-Piece Piston Rings

TIME GOES ON—*But The Truck Stands Still*

There isn't a truck built that will not take a hill under full load if the engine is delivering full power.

But let that engine falter even to a slight degree and the truck will tucker out before it's part way up the grade.

That's when the truck owner's pocketbook begins to suffer. That's when the air around the driver takes on a hue of deep indigo. That's when a disappointed customer at the other end of the line begins to tear his hair and consider the advisability of placing his business elsewhere.

But all of that can be avoided if the engine is given the attention it should and must have.

The very minute a truck engine begins to show signs of loss of vitality, loss of power, ***investigate!*** First of all look to the piston rings. If they aren't holding ***all*** of the fuel in the combustion chamber where it can be compressed into power, and if they aren't keeping oil out, loss of power is bound to result. And with loss of power comes loss of money and business.

Thirty-three Branch Offices prepared to give practically 24-hour service on Gill One-Piece Piston Rings to ***every*** jobber, supply store, dealer, garage and repair shop in the country.

The **Gill Manu**
Chicago.

Sole Export Agent:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

Gill

One-Piece Piston Rings

Assure this

THE TRUCK GOES UP—*And Delivery's Made on Schedule*

A satisfied customer is one that gets ***what*** he wants ***when*** he wants it. It's up to the manufacturer or merchant to see that he gets ***what*** he wants. But it's up to the truck to get it to him ***when*** he wants it.

The one certain way to instill confidence in a truck is to put Gill One-Piece Piston Rings in its engine. Then that old truck will laugh at hills; will plough its way through mud and sand and snow; and will deliver its load on schedule.

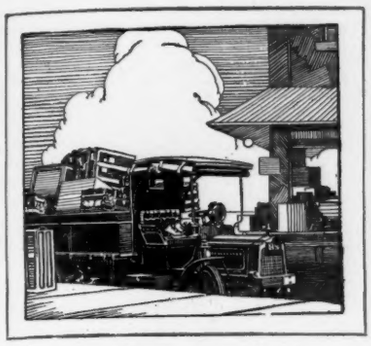
For Gill Piston Rings keep the power of youth in an engine. They won't let it experience the weakness that usually accompanies old age or rigorous service.

Gill Piston Rings, because they are ***individually*** cast from a special gray iron, retain their elasticity under the stress and strain of the hardest usage. They press so snugly against the cylinder walls that gasoline cannot waste past them. Every drop is compressed into power. And they keep sparkplugs clean by keeping oil out of the firing chamber. They are proof positive against loss of power.

-facturing Company
Illinois

Canadian Manufacturer:
BROWN ENGINEERING CORPORATION
Toronto, Ontario

Identify **the Gill One-Piece Piston Ring by the joint, but do not measure its merit by the joint *alone*.**



In addition to Packard Truck, Multibestos brake lining is factory equipment on the trucks shown below

A Safe Guide for Truck Owners

TRUCK engineers *know* brake lining. They are testing it continually, for they realize that safe, satisfactory truck performance demands good brakes and staunch brake lining.

America's foremost truck engineers have rendered an indisputable opinion in favor of Multibestos. They have adopted it as *factory equipment.* Through exhaustive laboratory analyses; through gruelling road tests; through bald-faced records of service, they have learned the stamina, long wear and dependability of the Multibestos Interlocking Weave, long-fibred asbestos and sturdy wire strands.

The experience of these engineers—worth thousands of dollars to America's truck owners—costs you nothing. Will you make capital of it? When brakes need relining, *use Multibestos!*

Send for valuable free book, "The Care of Your Brakes"

MULTIBESTOS COMPANY
Walpole, Mass., U. S. A.

CHICAGO
1430 Michigan Avenue
SAN FRANCISCO
1035 Polk Street
KANSAS CITY
3104 Tracy Avenue
CHATTANOOGA
Eighth and Broad Streets
NEW YORK
105 W. 63rd Street
(West of Broadway)

See us at space 113, A. E. A. Exhibit, Nov. 15-20, Coliseum, Chicago

MULTIBESTOS Brake Lining Is Factory Equipment on the Following:

TRUCKS

Acason
Ace
Acme
All Power
American-La France
Armleder
Atco
Atterbury
Available
Beaver
Brockway
Buffalo
Capitol
Clydesdale
Collier
Concord
Conestoga
Dart
Day-Elder
Dearborn
Dependable
Detroit
Diamond T
Dodge Bros.
Dorris
Fageol
Federal
Ford
Gabriel
Garford
G-M-C
Giant
H. R. L.
Hahn
Hall
Hendrickson
Hewitt-Ludlow
Huffman
Independent
Jackson
Kalamazoo
Kelly-Springfield
Kissel Freighter
Kleiber
Lippard-Stewart
Luedinghaus
Maccar
Mack
Master
Maxwell
Menges
Menominee
Mutual
National
Netco
Norwalk
O-K
Oneida
Parker
Patriot
Pierce-Arrow
Rainier
Selden
Seneca
Service
Signal
Standard
Standard Oil Company of Ohio
Sterling
Studebaker
Sullivan
Super
Texan
Tiffin
Tower
Twin City
Velie
Watson
Wilcox Trux

TRACTORS

Avery
Ballor
Boring
Chase
Dauch
Emerson-Brantingham
G-O
Hart-Parr
Illinois Super Drive
Indiana
Liberty
Massey-Harris
Moline-Universal
Monarch
National
Parrett
Samson
Waterloo Boy

AXLES

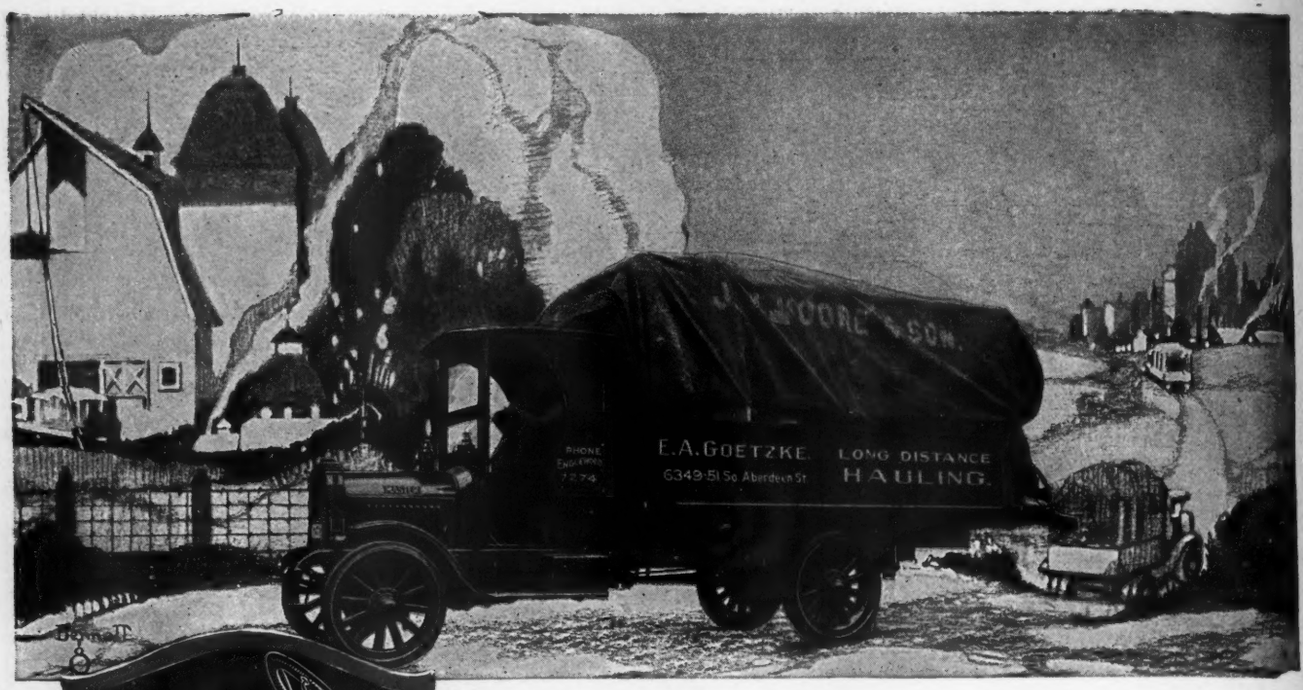
Eaton
Peru
Spacke
Standard
Timken-Detroit
Torbensen
Vulcan
Wisconsin

MOTORCYCLES

Excelsior
Harley-Davidson

In addition to the above, Multibestos Brake Lining is factory equipment on the leading American passenger cars

MULTIBESTOS BRAKE LINING



STEERING GEAR
Master-Ross

Semi-irreversible, screw and solid nut type, operated by hardened steel worm. All contact surfaces are steel—heat treated and run in oil. Steel arm actuated through straight line. No adjustments necessary except ball thrust bearings which are provided to make steering easy.

balanced oversize

Makes Master Trucks Masters of Long-Distance Hauling

THE man with a Truck Line buys trucks as all truck owners are learning to buy them—not by price per truck, but by price per mile. This accounts for the large number of Masters in Truck Line service.

Here Master balanced oversize means dependability and low upkeep—high earning capacity and long years of service. Here the Master gets the real test a truck must pass before it can qualify as a good investment.

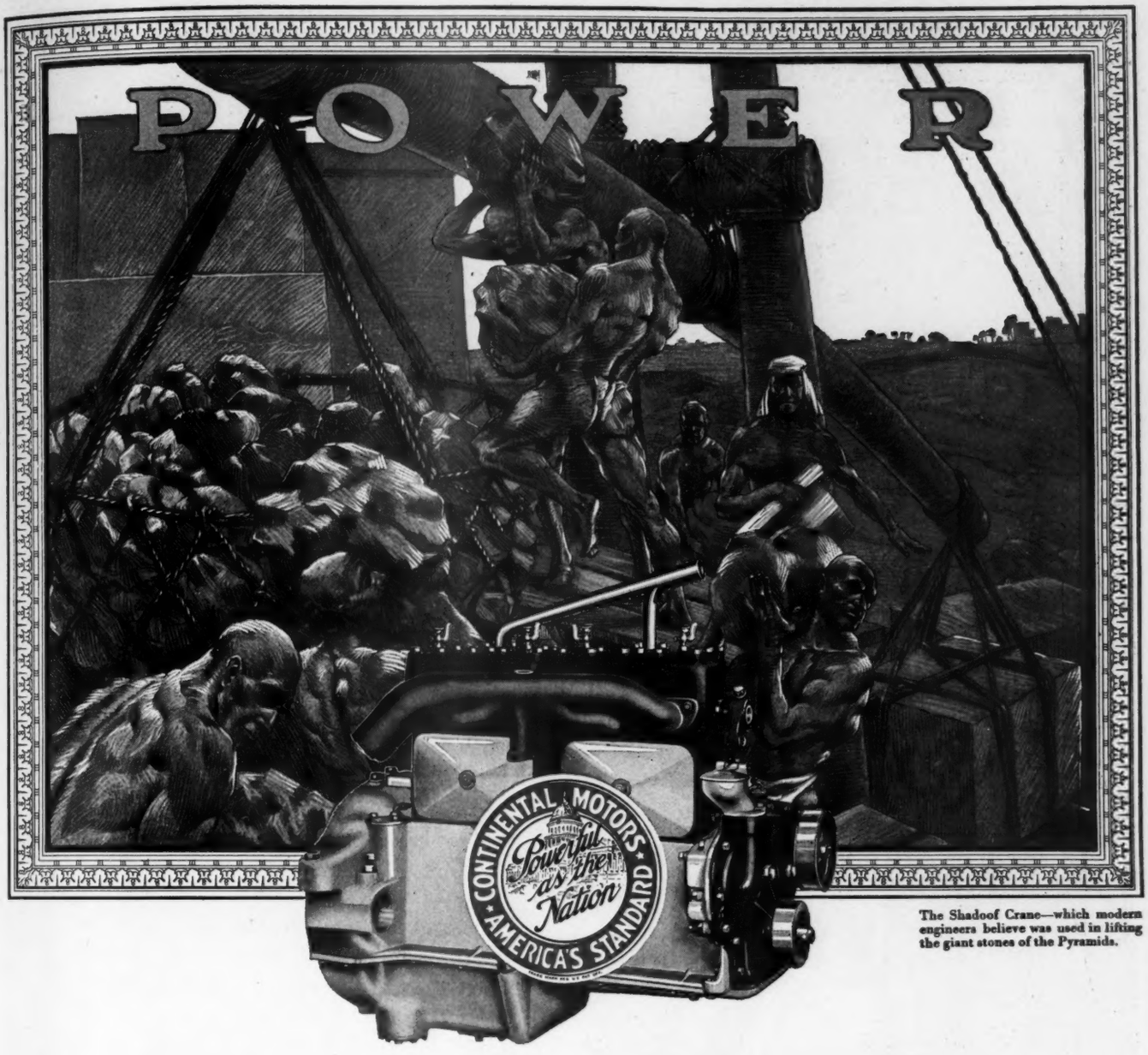
Long-distance hauling is a strenuous life for a truck. Master dealers and Master owners appreciate the balanced oversize that keeps the Master on the road—day after day under all conditions of service.

14 Master Models—1½ to 6 tons.

MASTER TRUCKS, Inc.
Chicago, Illinois

MASTER TRUCKS

MASTER OF THE LOAD ON ANY ROAD



The Shadoof Crane—which modern engineers believe was used in lifting the giant stones of the Pyramids.

The vision that was responsible for the development of those basic mechanical principles has, in a sense, been inherited by the motor builder who makes use of these principles today. ¶ For where Continental Motors are produced, the vision of the directing minds of the organization encompasses the automotive needs of the future as well as those of the moment. And it is this foresight that insures to the motor world the CONTINUED elevation of the already high standards that are represented by the Continental Red Seal.

CONTINENTAL MOTORS CORPORATION

Offices: Detroit, U. S. A. **Factories: Detroit and Muskegon**

Largest Exclusive Motor Manufacturers in the World

Continental Motors

STANDARD POWER FOR TRUCKS, AUTOMOBILES AND TRACTORS

HIGHWAY TRAILER

EDGERTON WISCONSIN

The Largest Trailer Plant in the World

Sell the Trailer These Great Firms Choose

Many Bankers Now Stipulate the Use of Trailers in Financing Truck Sales

These Are a Few Large Operators of Highway Trailers

The U. S. Army *The U. S. Navy*

Baldwin Locomotive Works
Philadelphia
American Telephone & Telegraph Company
The Cadillac Motor Car Company
Detroit
The National Tea Company
"Piggly-Wiggly" Chain Stores
Headquarters, Chicago
The Timroth Motor Express Company
Chicago
Southwestern Telephone & Telegraph Co.
St. Louis, Mo.
Towars Creamery Co.
Detroit
Chicago Telephone Company
The T. M. E. R. & L. Interurban Express Co.
Milwaukee, Minn.
The Fisher Body Co.
Detroit
The Rex Manufacturing Co.
Connersville, Ind
The Public Service Company
Chicago
The Timken-Detroit Axle Co.
Detroit
Lindeteves-Stokvis Co.
Amsterdam, Holland
Dutch East Indies
Semarang-Soerabaya-Batavia
Tegal-Djokjakorta-Bandoeng
Medan-Makassar
T. E. M. A.
Buenos Aires-Shanghai

Highway Trailers have established a dominant place in the scheme of modern transportation.

Nothing could emphasize their importance more strongly than the recognition of their economy and efficiency by hundreds of concerns, whose business extends not only throughout America, but in every part of the world.

And now many bankers have endorsed the utility and earning power of the trailer, by stipulating the use of trailers as a condition to financing truck sales.

Every truck in your territory is a prospect for Highway Trailers. The time seems near when every truck sold, will sell one or more trailers.

The quality and construction of Highway Trailers is proved by the fact that it was the only trailer accepted without design change by the U. S. Government, which operates more than $1,000,000 worth.

You can sell the advantages that made Highway Trailers the choice of all these. It is your opportunity to build a big profitable business. Write for details.

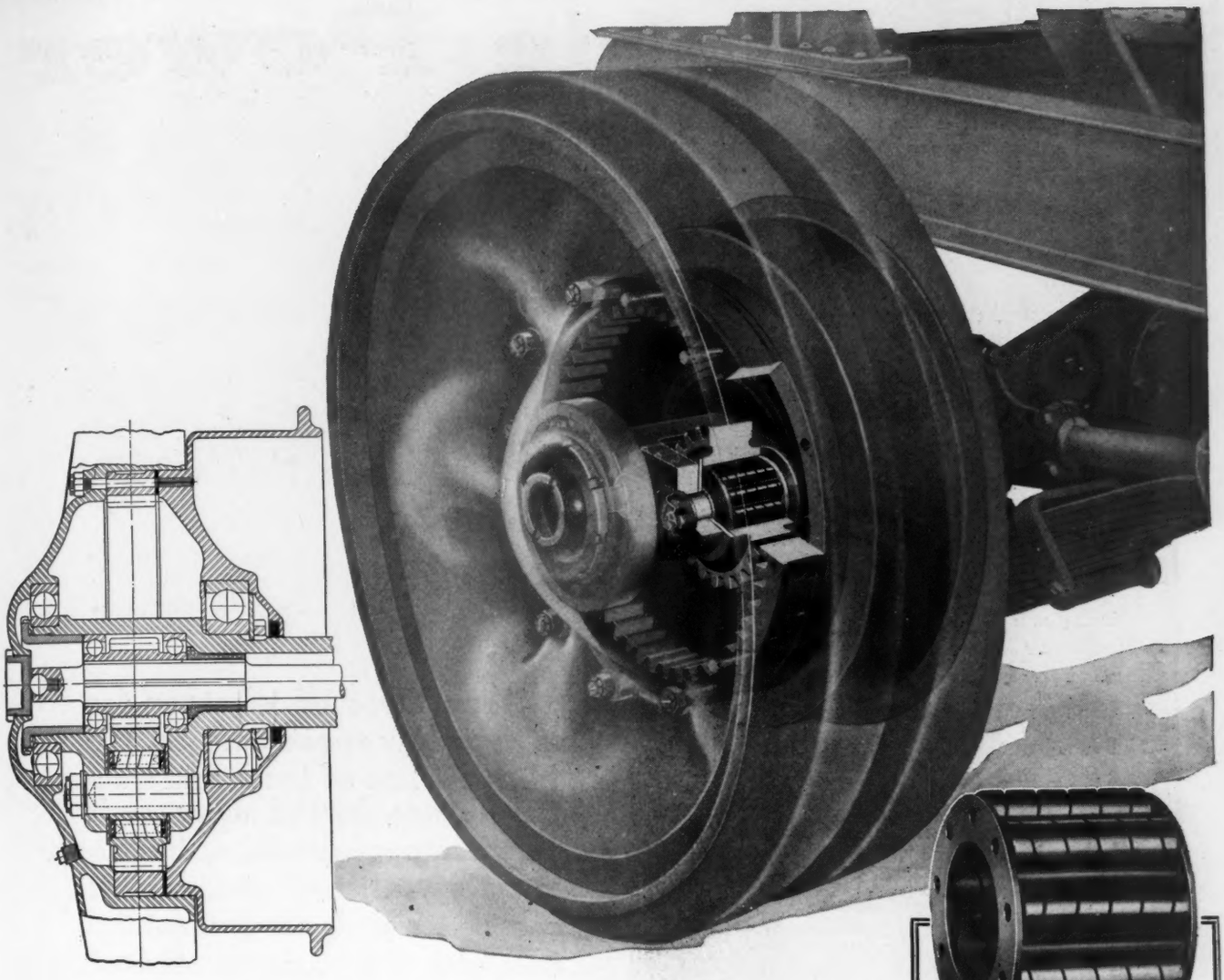
Note Price Advantage of Highway Trailers

1½ Ton $785 4 Ton $1325

2½ Ton $995 6 Ton $1695

The Timroth Motor Express Co., of Chicago Operates a Large Fleet of Highway Trailers in Connection With 150 Trucks. "Each of My Trailers Earns $25 a Day," Says Mr. Timroth.

(39)



Effectively Meeting Idler Mounting Requirements

In this five ton truck axle the drive shafts run through the center of the axle housing, yet it has been possible to incorporate an internal drive at the hub by inserting an idler between the driving pinion on the axle shaft and the ring gear in the wheel.

The idler gear is mounted on a single Hyatt Roller Assembly, ample in capacity to withstand the extra heavy load due to tooth pressure on both sides of the idler. The rollers are long enough to steady the idler against rocking. An inner race is employed but no outer race is necessary since heat treatment of the idler provides a surface of sufficient hardness.

This design is another illustration of how Hyatt Roller Bearings are of great assistance to the engineer in solving the problem of carrying a heavy load within small diameter restrictions.

In Operation—

Hyatt Roller Bearings keep idler gears running straight and true without the necessity of adjustment. They add to the durability of axle designs, through being built and installed for permanent service.

Being self-oiling, self-cleaning, rugged and enduring, Hyatt Roller Bearings assure proper bearing performance in all locations at all times.

HYATT ROLLER BEARING COMPANY

Motor Bearings Division Detroit, Michigan

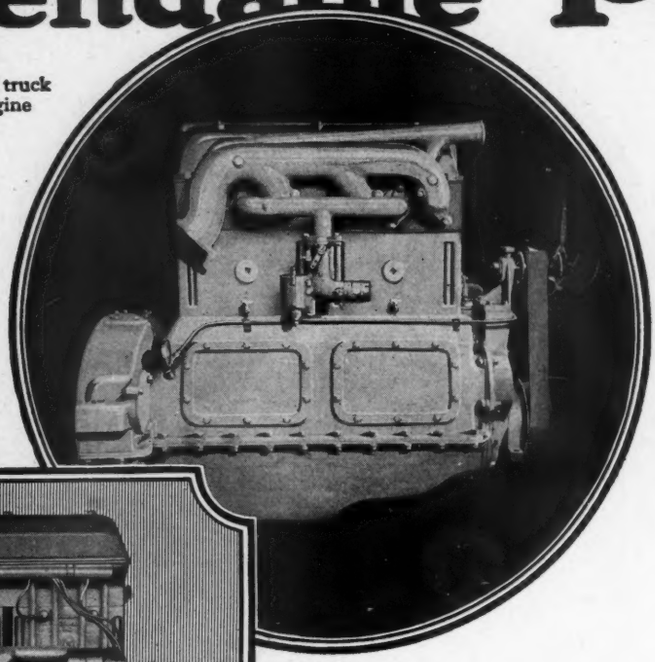
Tractor Bearings Division Chicago, Ill.

Industrial Bearings Division New York, N. Y.

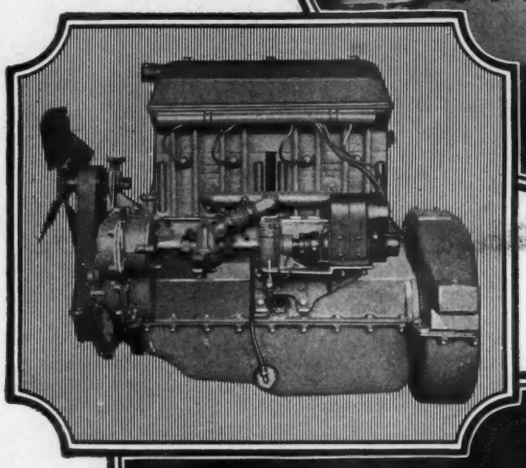
HYATT QUIET BEARINGS

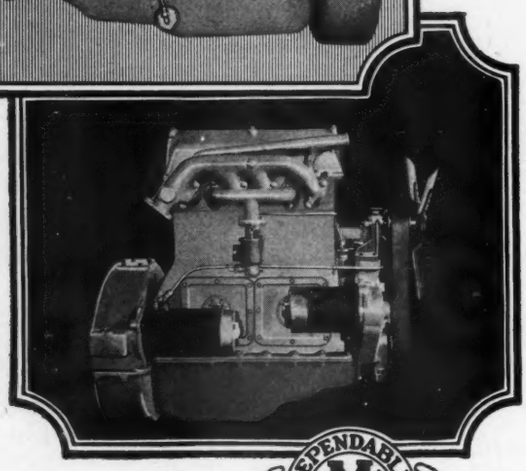
Dependable Power

Midwest 4½" x 6" truck and tractor engine



Midwest 4⅛" x 5¼" truck and tractor engine





Midwest 3½" x 5" truck and tractor engine

Regardless of whether for high or low speed service, the Midwest line of truck and tractor engines, by the sheer merit of their performance, has invariably satisfied, and in most cases exceeded, our guarantee and also the expectations of truck and tractor engineers.

Because of this exceptionally fine performance it is only logical for users to prefer trucks and tractors equipped with Midwest engines.

You should be able to satisfy their demand.

We will exhibit our Truck and Tractor engine at the New York and Chicago Automobile Shows and at Columbus Tractor Show, February 7 to 12.

MIDWEST ENGINE CO.
Indianapolis, U. S. A.

MIDWEST
TRUCK and TRACTOR ENGINE

More Than an Annoyance —A Needless Expense

Stalled! And the time of three men is wasted while they endeavor to spin a hard-starting motor. Even the strongest man may not be equal to the task that the

Exide
BATTERY

For Gas-Truck Starting and Lighting

does at the touch of a pedal.

Better deliveries, less wastage of gas from idling motors, more contented employees—these are some of the assured results of equipping with the Exide Truck Battery.

Built to stand up under the most severe truck service without special spring mounting.

Write and let us tell you why this battery—
built for the army tanks—will absolutely
make good in your solid-tired gas-trucks.

THE ELECTRIC STORAGE BATTERY CO.

Oldest and largest manufacturers in the world of Storage Batteries for every purpose

1888 PHILADELPHIA 1920

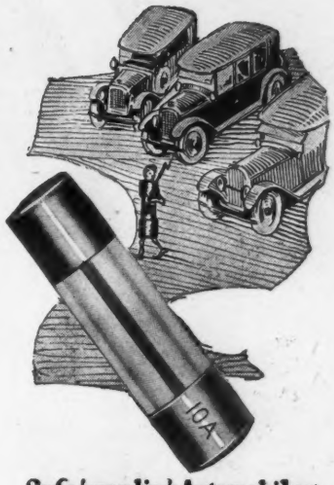
Branches in seventeen cities

Special Canadian Representatives: Chas. E. Goad Engineering Co., Limited
Toronto and Montreal

among brake linings?

5 years in hot oil!

That is the existence that Johns-Manville Seigelite Packing contracts for as a gasket on crank or transmission cases. It resists the action of water and gasoline as well as oil through years of usefulness.



Safeguarding Automobiles.

The Noark Automobile Lighting Fuse is one that you can absolutely depend upon to protect your customers' automobiles. The name Noark means accuracy.

Noark Fuses are made either with glass or fibre tubes. Send for booklet listing American cars and size of fuses for each.

Meet Our New Baby

Here is a new Clutch Facing, an asbestos compound with remarkable wear-resisting and gripping power. Johns-Manville Asbestos Clutch Facing is specially made to fit disc clutches for practically every make of car that is so equipped

The Hero of twelve million explosions!

Gasketing a cylinder head for a couple of years, standing up under about twelve million explosions. It's all a part of the job that Service Sheet Packing does so well.

JOHNS-MANVILLE

INCORPORATED

Madison Avenue at 41st Street, New York City

10 Factories—Branches in 64 Large Cities

For Canada:

CANADIAN JOHNS-MANVILLE CO., Ltd.

Toronto

MANVILLE EQUIPMENT

DOUBT never enters the head of the chap who employs a Walker Badger Truck Jack. He doesn't know the definition of delays due to defective jack operation.

Walker Badger Jacks possess in-built quality and a superabundance of it. Each part is as carefully made as though the entire operation of the jack depended solely upon it. There are no weak features. Every piece from base to lifting cap is 100% perfect. There are no internal disturbances—no hinderance to efficient action by faulty or ill-fitting parts. No binding—no lost power. Every working part machined in gigs. Pawls are of drop-forged steel—virtually indestructible. Automatic lock that stays "put" as long as you want it.

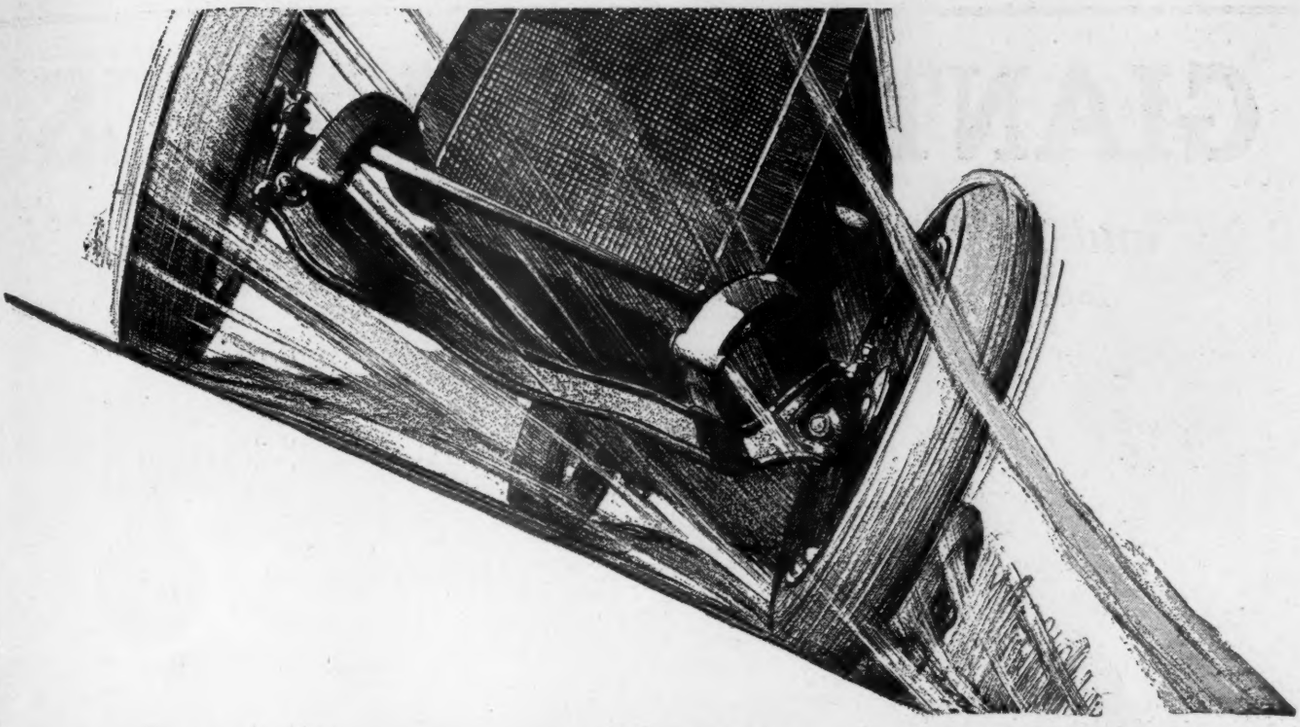
Pressure is evenly distributed; there's no uneven wear anywhere. No wasting away of parts to create trouble, breakage and back-breaking work for user. Every jack is factory-tested for lifting strength—labeled with load capacity and guaranteed to give absolutely satisfactory, thoroughly efficient service.

A world-wide reputation for thorough dependability renders them essential as standard equipment on quality-built trucks and as regular stock with accessory dealers who endeavor to give their patrons products of highest merit.

Catalog listing all of the famous Walker Badger Line—"A Jack for Every Job"—upon request. Send for it today.

WALKER MFG. CO.
30 Hamilton St. RACINE, WISCONSIN

WALKER BADGER TRUCK JACKS



TIMKEN
TAPERED ROLLER BEARINGS

Banked!

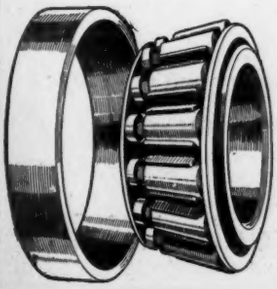
Only the steep incline keeps the speeding car on the track. Without that upward tilt it would be hurled off to destruction by centrifugal force. Think what an end thrust there is on the wheel bearings at that mad speed!

But Timkens meet it!

Every time, any time, in any degree, on the track, on the road!

Timken Tapered Rolling Bearings simply "eat up" any combination of end thrust and radial load.

At Points of Hard Service



Timken Tapered Roller Bearings are used in the great majority of automotive vehicles at points of hard service:

Transmission — Pinion Shaft
Front Wheels — Differential
Rear Wheels — Steering Knuckle
Rear Axle Gears—Worm Gear, Internal Gear, Bevel, and Double Reduction.

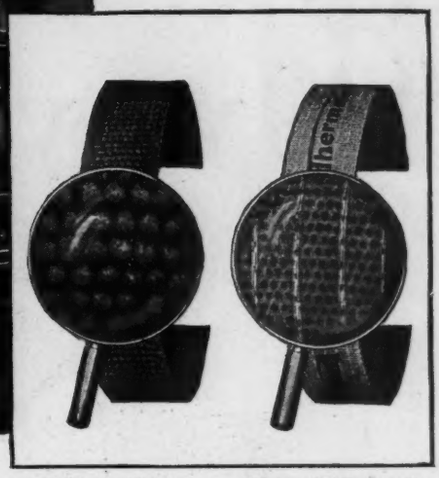
This leadership is established on the tapered principle of design, quality of manufacture, performance on the road, and service to the automotive industry.

THE TIMKEN ROLLER BEARING CO., Canton, O.

Plant manufacturing complete bearings at
Canton, O., Columbus, O., Birmingham, Eng., Paris, France
General Offices, Steel, Rolling and Tube Mills, Canton, Ohio

Timken Tapered Roller Bearings for Passenger Cars, Trucks, Tractors, Trailers, Farm Implements, Machinery, and Industrial Appliances.

One of the giant hydraulic presses which compresses Thermoid Brake Lining under 2000 pounds pressure per square inch at 320° F.



Ordinary Woven Lining
Notice the loosely woven texture.
Wears down quickly and unevenly.
Loses its gripping power as it wears.

Thermoid Hydraulic Compressed Brake Lining
Notice the compact texture.
Wears down slowly.
Gives uniform gripping surface until worn wafer-thin.

Tremendous hydraulic pressure insures longer wear

ORDINARY woven brake linings are simply strips of woven tape and cannot stand the grind of long, hard wear. Thermoid Brake Lining, in addition to being woven from the highest grade asbestos, brass wire and fabric—*40% more material* by weight being used — is *hydraulic compressed*.

A battery of giant double-deck hydraulic presses compresses Thermoid Brake Lining under 2000 lbs. of pressure to the square inch at 320 degrees Fahrenheit.

This tremendous pressure insures in Thermoid Brake Lining not only *longer* wear, but also a surface that wears down with slow uniformity, having the correct "co-efficient of friction" at all times.

Grapnalized to resist moisture

Thermoid Brake Lining is impregnated with *"Grapnal,"* an exclusive compound to make it moisture-proof and more wear-resisting. No other brake lining can be *"Grapnalized."*

The net result of these exclusive processes is a brake lining extraordinary in strength and wearing qualities. More and more motorists and mechanics are insisting on Thermoid Brake Lining because it delivers the most in wear and service.

Motorists realize the danger of inefficient brakes

Practically every car owner now realizes the grave menace of inefficient brakes. Each of these car owners wants to know that his brakes will hold. To insure safe stopping they are insisting that their brakes be lined with Thermoid.

Co-operate with this movement for safer motoring. Render a real service to your customers. Build up a more profitable business in brake lining.

Send for the Thermoid Brake Inspection Stopping Chart, also the 1920 Thermoid Sales Plan—full of interest to every dealer and garage.

THERMOID RUBBER COMPANY

Factory and Main Offices: TRENTON, N. J.

New York Chicago San Francisco Detroit Cleveland Atlanta Philadelphia Pittsburgh Boston London Paris Turin

Canadian Distributors:
The Canadian Fairbanks-Morse Co., Limited, Montreal Branches in all principal Canadian cities

Thermoid Brake Lining

Hydraulic Compressed

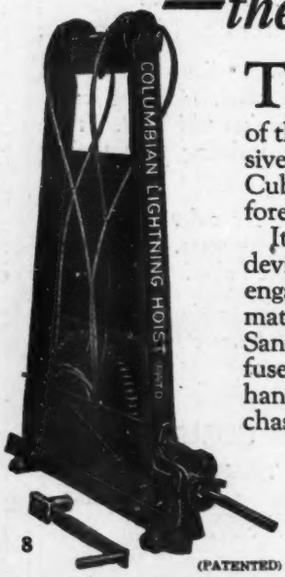
Makers of "Thermoid-Hardy Universal Joints" and "Thermoid Crolide Compound Tires"

TRADEMARK

"Always On the Job"

A Columbian Lightning Hoist attached to a wooden body—One man handles a Five-ton load with ease

—the Hoist



(PATENTED)

THE Columbian Lightning Hoist is in use in every part of the United States; also extensively used in Canada, Mexico, Cuba, Jamaica, Japan and other foreign countries.

It is a time and labor saving device for all concerns who are engaged in the hauling of loose materials such as Coal, Gravel, Sand, Crushed Rocks, Dirt, Refuse, etc. One man can easily handle a five-ton load. Fits any chassis—can be easily attached.

—the Body

THE Columbian All Welded Metal Dump Bed is the latest in dump body construction. Thru the use of this all welded method all rivets are eliminated, making a strong job for durability and hard usage.

Made in two standard models, straight sides and flared sides, with or without endgate.

Write us for illustrated folder No. 69, or

Write Your Nearest Distributor

Davenport Body Co., - Davenport Iowa
1509-33 Rockingham Road
Hummel Mfg. Co., - St. Louis, Missouri
3008 La Salle Street
Jules Mechanic - - Pittsburgh, Pa.
248 Croft Street
Giant Motor Truck Co., - Vancouver, B. C.
Grandville Pac. Street
Largerquist Car & Auto Co., Des Moines, Ia.
514 West 2nd Street
S. S. Albright, - Sacramento, California
13th & U Streets
Beard & Co., - Louisville, Kentucky
418 Keller Building
Blackwell Motor Co., Spokane, Washington
Corner 3rd & Post Streets
Landes & Co., - Salt Lake, Utah
2nd. West and South Temple
Jacob H. Press & Sons, 300 Haltsead Street, Chicago, Illinois

COLUMBIAN STEEL TANK CO.

"TANKS FOR THE WORLD"
1519-1625 WEST 12th STREET

"ESTABLISHED IN 1894"
KANSAS CITY, MISSOURI.

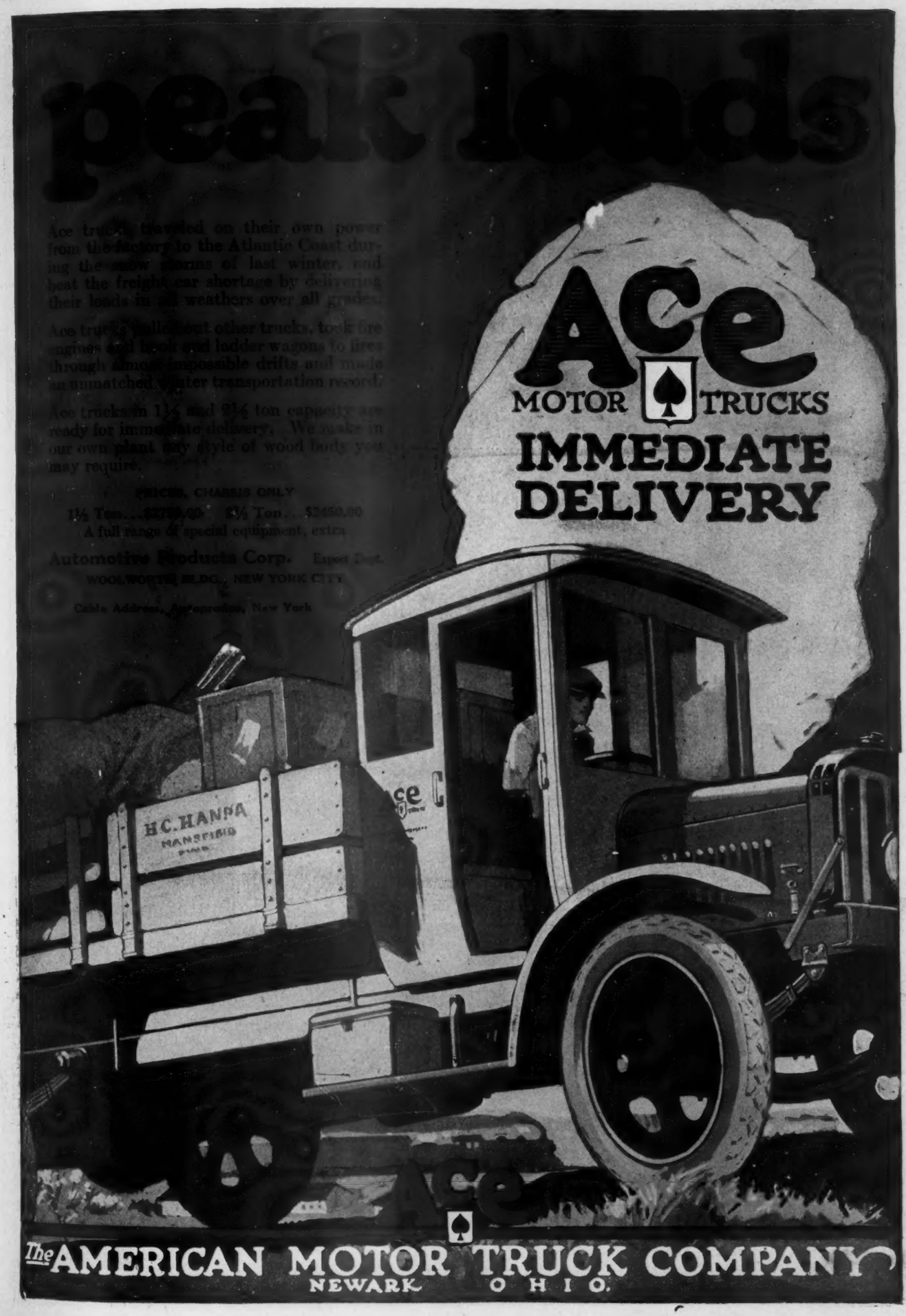
EATON

. . . work that bears the stamp of practiced skill

AS the years roll on there is an ever-growing appreciation among the people of this land for work that bears the stamp of practiced skill. The men of responsible position in our factory are long trained in the work of building axles. Proud of their skill and jealous of it, these men are responsible for that quality which is known as Eaton.

THE EATON AXLE COMPANY
CLEVELAND, OHIO
THE AXLE DIVISION OF THE STANDARD PARTS COMPANY
OTHER DIVISIONS ARE: THE PERFECTION SPRING COMPANY, THE BOCK BEARING COMPANY, THE STANDARD WELDING COMPANY

AXLES


peak loads
Ace trucks traveled on their own power from the factory to the Atlantic Coast during the snow storms of last winter, and beat the freight car shortage by delivering their loads in all weathers over all grades.
Ace trucks pulled out other trucks, took fire engines and hook and ladder wagons to fires through almost impossible drifts and made an unmatched water transportation record.
Ace trucks in 1½ and 3½ ton capacity are ready for immediate delivery. We make in our own plant any style of wood body you may require.
PRICES, CHASSIS ONLY
1½ Ton....$2750.00 3½ Ton... $3450.00
A full range of special equipment, extra
Automotive Products Corp. Export Dept.
WOOLWORTH BLDG., NEW YORK CITY
Cable Address, Autoproduc, New York
Ace
MOTOR TRUCKS
IMMEDIATE DELIVERY
H.C. HANPA
MANSFIELD
The AMERICAN MOTOR TRUCK COMPANY
NEWARK OHIO.

WORK!

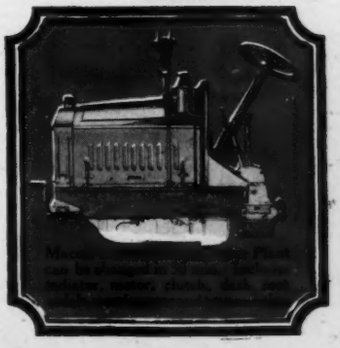
2 Years Day and Night Without a Breakdown

When the shortage of locomotives and freight cars was most acute, Maccar Trucks did railroad work!

For two years three 2½ ton Maccars, owned by Talbot Auto Express Co., N. Y., hauled freight on contract 20 to 24 hours daily. They were loaded full every trip, regardless of weight—for the goods had to be moved. And not a single breakdown occurred!

Though owners are urged not to overload their trucks, this company is proud of the fact that when these Maccars had to be overloaded they stood up to the job. When the trucks were overhauled at the conclusion of the contract no serious repairs were needed.

For continuous, dependable service get a Maccar!



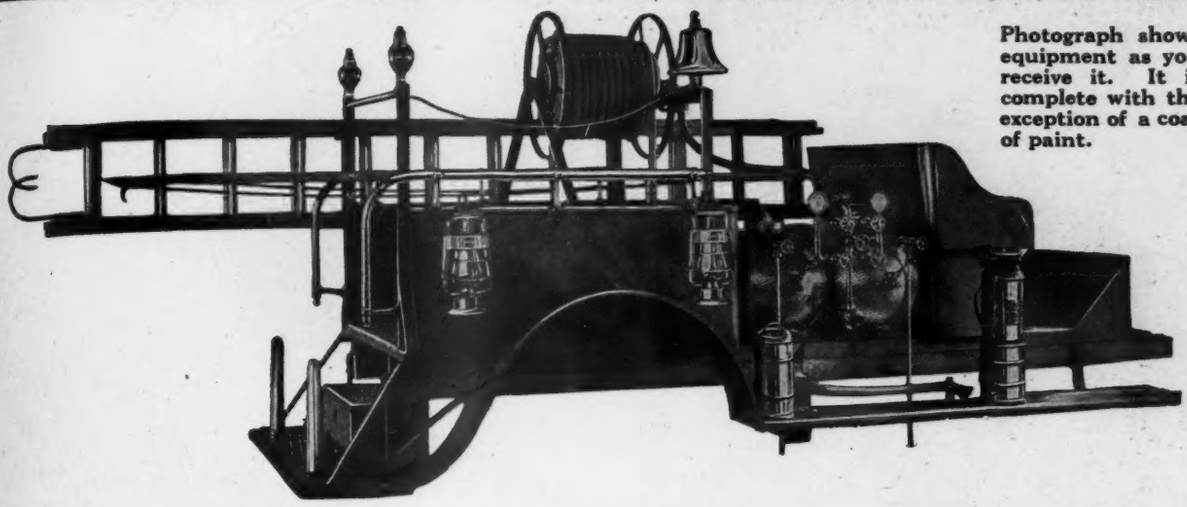
Models: 1 to 5½ Tons Carrying Capacity

Dealers: Write for the Maccar Proposition

Maccar Truck Company, Scranton, Pa.

"the truck of continuous service"

Maccar



Photograph shows equipment as you receive it. It is complete with the exception of a coat of paint.

MAKE A DOUBLE PROFIT ON THE TRUCK YOU NOW SELL!

CHILDS APPARATUS is now made to fit any chassis—that means we can supply you with apparatus complete, ready to go on any make of motor truck you sell, giving you a new opportunity to make two profits where there was only one before.

You get this sturdy, dependable equipment all complete, except a coat of paint; it hooks up to the chassis by tightening some bolts. Then you deliver the fire department truck complete.

Or, if you prefer, you can deliver the chassis to us and we will mount the equipment, paint the entire outfit and ship you the completed car.

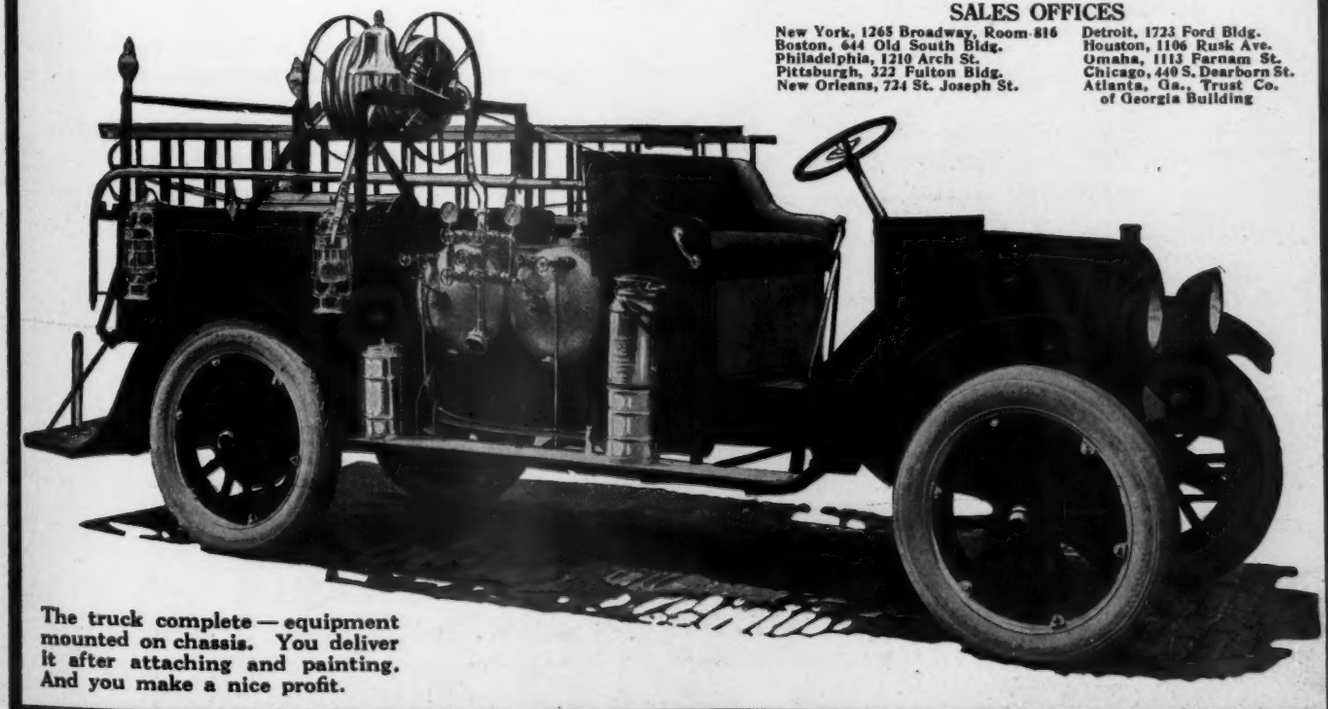
Sell a fire truck to your town. A chance for a sale you never made before—a profit that you have been missing.

Makers of Fire Apparatus for the past 20 years

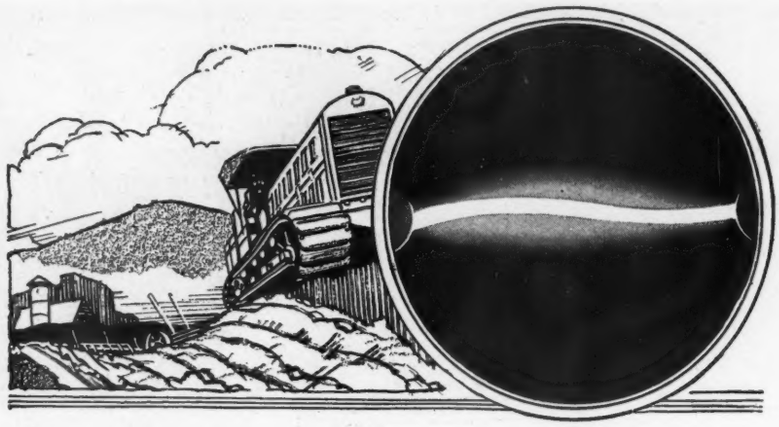
O. J. CHILDS COMPANY, UTICA, N. Y.
FIRE APPARATUS

SALES OFFICES

New York, 1265 Broadway, Room 816
Boston, 644 Old South Bldg.
Philadelphia, 1210 Arch St.
Pittsburgh, 322 Fulton Bldg.
New Orleans, 724 St. Joseph St.
Detroit, 1723 Ford Bldg.
Houston, 1106 Rusk Ave.
Omaha, 1113 Farnam St.
Chicago, 440 S. Dearborn St.
Atlanta, Ga., Trust Co. of Georgia Building



The truck complete — equipment mounted on chassis. You deliver it after attaching and painting. And you make a nice profit.



The white hot spark you want when you want it—at [illegible]

What's my "pleasure" car got to do with a farm tractor?

Sparks

21. Can you get there and back without lights or starter?
Sure!

22. Can you get there and back without ignition?
You can not.

23. Should ignition be independent of lights and starter!
Certainly! If you want absolute dependability.

24. How?
By insisting on a "mag."

25. Who was the pioneer of the modern, efficient "mag"?
Eisemann.

(To be continued)

Everything, if you will come right down to sound principles.

In the first place, nine cases out of ten your car is used more for *utility* than pleasure.

Next, the very thing you *want* is what the farmer *gets* from his Eisemann "mag" on tractors large or small. He must have white hot "juice" all-day-every-day, high or low speed, over rough or smooth ground, light or heavy soils, rain or shine.

You want what he bought in the Eisemann "mag"—

The simplest, the most economical, the most absolutely dependable form of ignition.

Ignition is the heart of your engine, no matter what it's used for.

So a tractor *has* got a lot to do with your car—ignition that won't lie down is the kind every gas engine should have.

THE EISEMANN MAGNETO CORPORATION
32 Thirty-Third Street, Brooklyn, N. Y.

Detroit: 85 Willis Avenue, W. **Chicago: 1469 So. Michigan Avenue**

See the Eisemann Exhibits at the Automobile Shows

New York, January 8th to 15th
Spaces D131-2-3-4

Chicago, January 29th to February 5th
Spaces 119 to 126 inclusive

Empire builders

WOOD Wheels carry huge trucks and their burdens of freight to all corners of the earth.

Unlike the wheels of the railway car, they demand neither smooth steel rail nor level road-bed. Over boulevards or rough hilly roads, WOOD Wheels carry their burdens faithfully and well, absorbing countless road shocks and resisting constant side thrust.

This is another reason why WOOD Wheels have been used for years and will continue to be used on the world's best trucks.

AUTOMOTIVE WOOD WHEEL MANUFACTURERS' ASSOCIATION
105 West Monroe Street Chicago, Ill.

WOOD WHEELS for MOTOR VEHICLES

"10 YEARS *of continuous* SERVICE"

The Columbia Warehouse Co., of New York City, say:

"Our Walter Trucks have given us dependable and continuous service for the past ten years, and we expect the same trucks will give us the same satisfactory service for the next ten years."

Walter Trucks—today—are doing the same amount of work they did 6, 8 and 10 years ago. Operating *continuously*, they have paid for themselves, over and over again, in their many years of faithful, economical service.

Walter Motor Trucks are *different*—

—The Patented Suspended Drive

—The Patented Automatic Locking Differential

—and 10 other *exclusive* mechanical improvements—

make the Walter the most efficient motor truck of today, operating with utmost economy and carrying loads over roads impassable to other trucks.

Dealers sell Walter Trucks to the very best trade. When you, a dealer, sell the Walter—the truck of inbuilt quality—you not only make a good, liberal sales profit, but you make the added profit that the Walter brings you through its elimination of practically all service expense.

Fleet owners find the Walter, the motor truck they *need* and *want*. this means continuous "repeats" and steady profit.

These, among others, are sales advantages the Walter Truck offers you. Be the dealer in your vicinity and get this business. Write today for the Walter contract.

5 TON

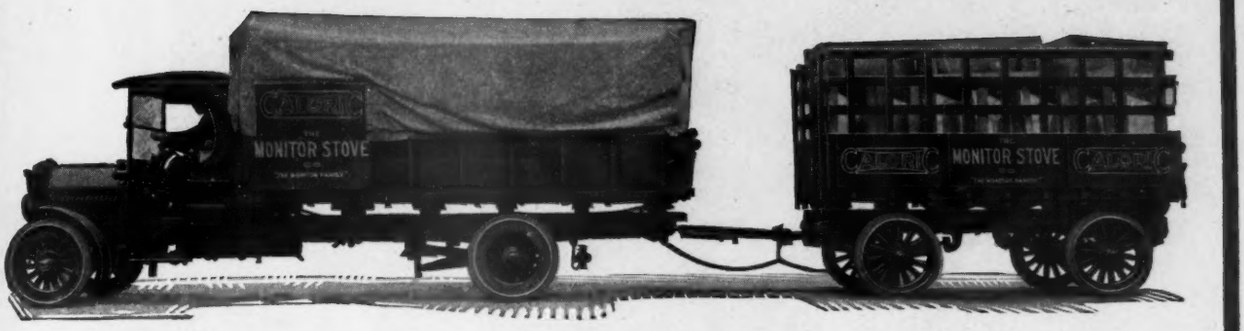
WALTER

Motor Trucks of Permanence

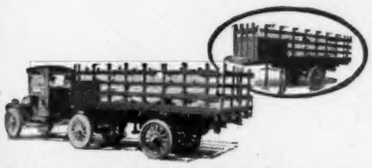
Walter Motor Truck Co. Sales Office: 605 Fifth Ave., New York

Trailmobile

Trade-Mark Reg. U. S. Patent Office



This is the Line You Want!



Semi-Trailmobiles for use with short wheel-base trucks are equipped with an exclusive fifth-wheel mechanism which makes coupling automatic. They are made in 2½ ton, 4 ton, 6 ton and 10 ton sizes. This is ideal equipment for city hauling.

Light four-wheeled Trailmobiles of 1,250 lbs., ¾-ton and 1-ton capacities are used with passenger cars or light trucks. Lumber dealers, farmers and buyers of farm produce do all their hauling with them and they are used in many other businesses, as a rapid and efficient means of delivery.

Heavy-duty Four-wheeled Trailmobiles for use behind trucks of the usual wheel-base are made in 1½ ton capacity one-way; 2 ton, 3½ ton and 5 ton capacities one-way and reversible.

Pole Trailmobiles for logs, poles, pipes and loads of great length are made with adjustable chock blocks, and other important mechanical features in 1½-ton and 3-ton capacities. In each case the truck carries an equal load.

TRAILMOBILES cut hauling costs almost in half and therefore sell on the strongest of all appeals at present—economy!

They offer you an opportunity to enlarge your volume on a very moderate capital investment.

There is a type and size to meet practically every trailer demand that can be made on you.

The Trailmobile is the best known of all Trailer lines. The most extensive advertising has burned the name on the mind of the public. Dealers receive the strongest selling support—that of a well-known name.

The stock to be carried is small. The profit margin is the same as on the most desirable trucks. There are so few wearing parts that service after the sale is moderate.

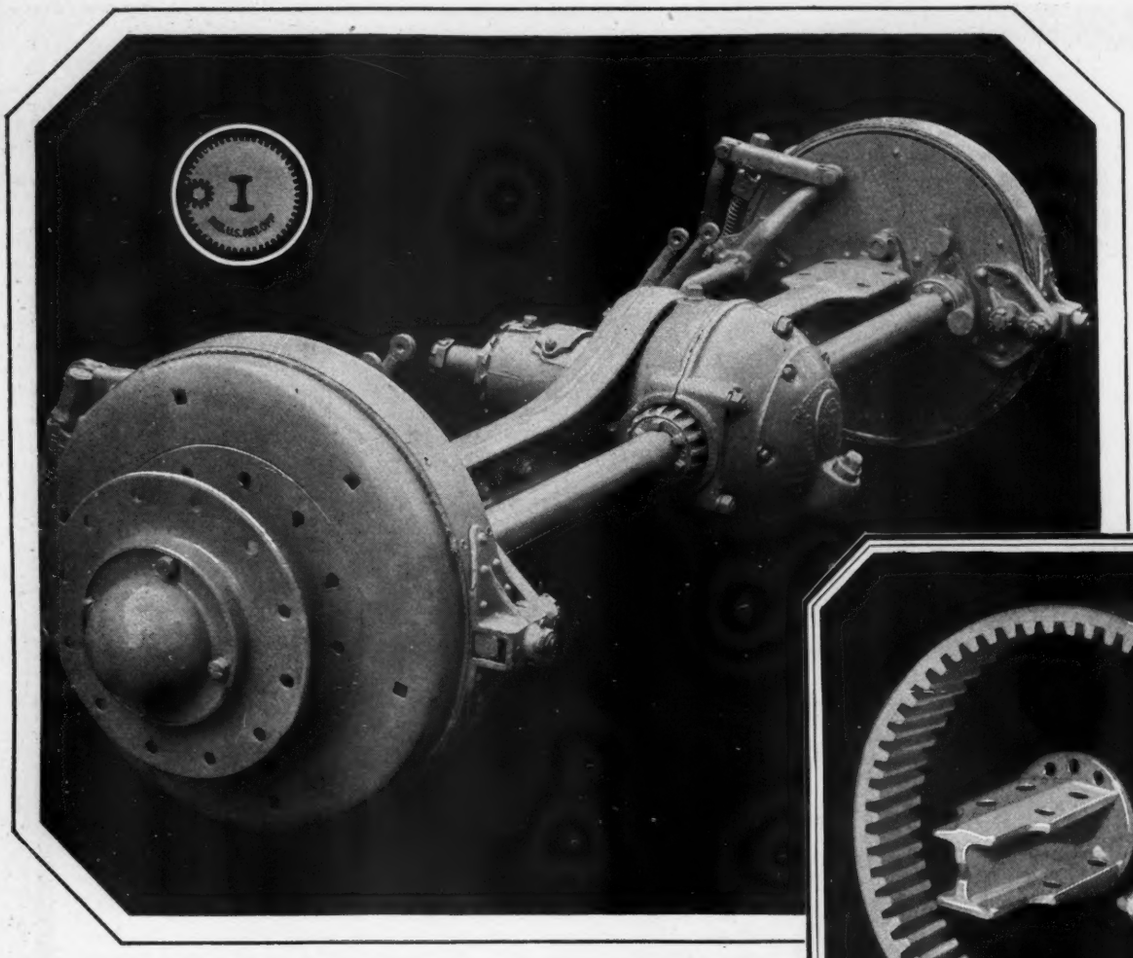
Many dealers have built splendid businesses with Trailmobiles. Some one is sure to do it in your territory. Write us now!

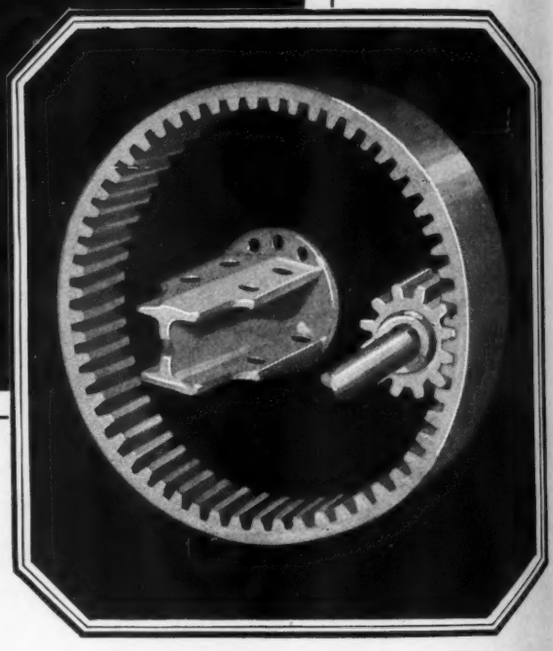
The Trailmobile Company

2901 Robertson Avenue, Oakley

CINCINNATI, OHIO

Good roads are preserved by reducing the load carried on each wheel





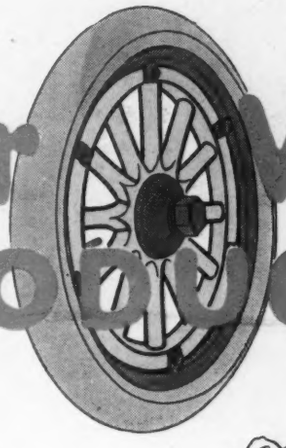
The internal gears and their pinions make the final gear reductions at the driving wheels, and deliver a much higher percentage of driving power.

It is demonstrated thousands of times in every-day trucking, that Torbensen-equipped trucks actually have greater hauling power; that they are more economical in operation and upkeep; and that they are much longer-lived. These advantages are so valuable and so certain that truck manufacturers are turning more and more to Torbensen axles.

TORBENSEN AXLES

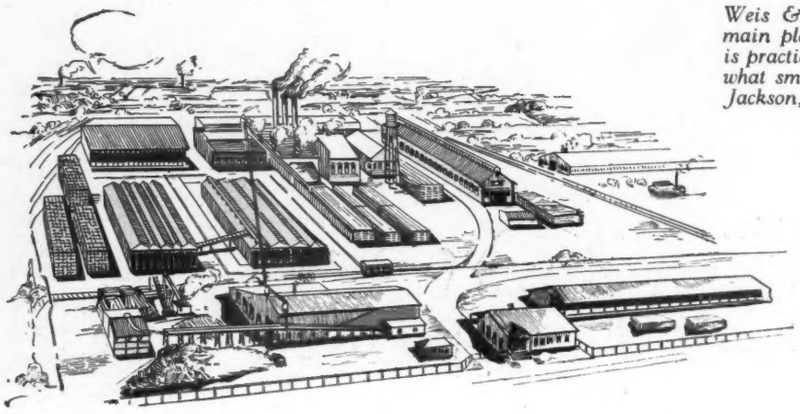
CLEVELAND, OHIO

Motor Wheel PRODUCTS



FROM standing tree to finished wood wheel—all within the confines of our own organization. This is the most important development of the formation of the Motor Wheel Corporation. Of course, some raw materials, such as base metal, will always be purchased in the open market. But the wood, as standing timber, is owned and marketed by the Motor Wheel Corporation.

All the manufacturing operations necessary to bring that wood thoroughly dried into the wheel assembly are performed in our own plants. Most all the metal accessories--the hubs, bolts, bands, etc.—are fabricated in our own plants, so that practically speaking the Motor Wheel Corporation is producing in round figures within its own walls from standing timber to finished wood wheel almost 4,000 sets of motor vehicle wheels a day.



Weis & Lesh Plant: Sketch shows main plant only at Memphis which is practically new. Similar but somewhat smaller plants are operating at Jackson, Tenn., and Monroe, La.

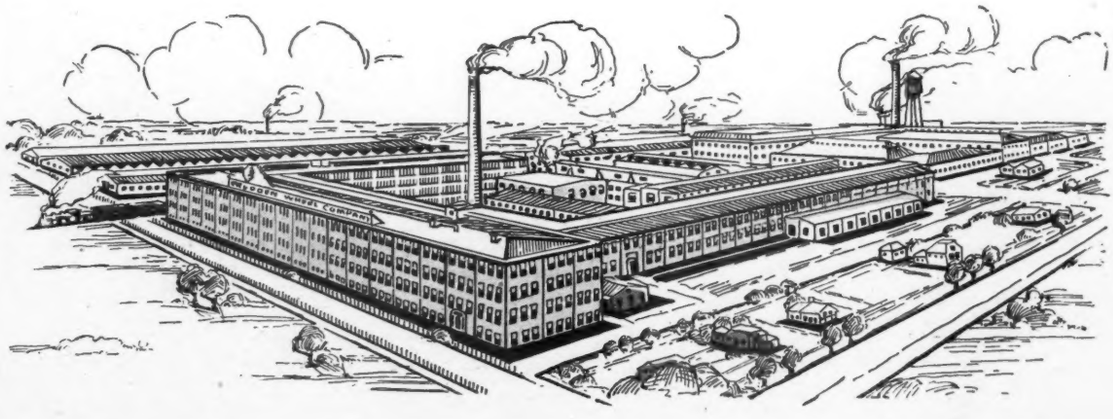
Four Million

TO produce this enormous output of more than 4,000,000 wheels a year almost three-quarters of a million feet of floor space are required—733,499 square feet to be exact. Nor does this include the Weis & Lesh plants in Memphis and Jackson, Tennessee; Monroe, Louisiana, and Light, Arkansas, together with saw mills at several southern points.

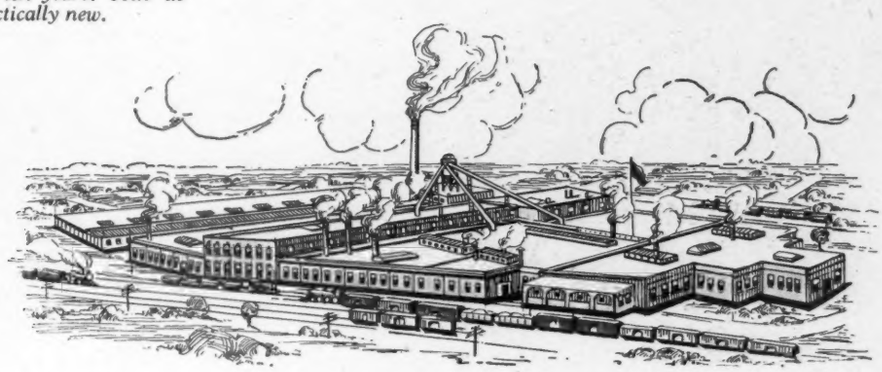
So vast are these southern properties that to insure deliveries between timber holdings and mills a standard gauge railway was constructed and is now owned and operated by the Motor Wheel Corporation, maintaining both a freight and passenger car schedule. In addition to this enormous output of wheels the various plants are producing daily about 10,000 wheel hubs

The division of production is as follows:

Prudden Wheel Plant: Main building a little over three years old. Four stories high. Is 70 x 700 ft. Entirely fireproof. Steel and concrete.



Auto Wheel Plant: All buildings new within the past ten years. Hub department is practically new.



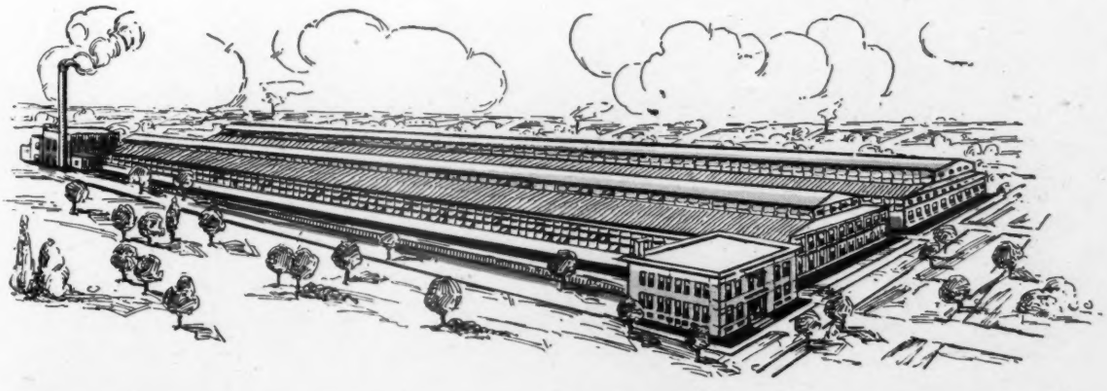
Wheels a Year

Prudden Wheel Plant: Passenger car wheels, about 2,000 sets daily. Motor truck wheels, about 1,000 sets daily. Hub shop, 2,000 sets daily. Rim shop, ample capacity for S. A. E. bands for truck wheels and felloe bands and rims for passenger car wheels.

Auto Wheel Plant: Passenger car wheels, 1,000 sets per day. Motor truck wheels, 250 sets per day. Hub shop, 700 sets per day.

The Gier Pressed Steel Plant: This is one of the most modern and most complete pressed steel plants in the country. About 40 per cent capacity is used to supply the wheel plants with hubs, drums and flanges. In addition to this the Gier plant is turning out large quantities of wire wheel hubs, brake discs, radiator shells, axle housings, transmission cases and stampings of like character.

Gier Pressed Steel Plant: Besides the building shown here, foundation and steel structure of a considerable addition are practically up.



THE men directly responsible for the organizing and the operating of the MOTOR WHEEL CORPORATION are H. F. Harper, President and General Manager; W. H. Newbrough, Chairman of Board of Directors; B. S. Gier, First Vice President and Treasurer; D. L. Porter, Vice President; W. C. Brock, Vice President; and C. C. Carlton, Secretary, who with O. A. Jenison, J. B. Siegfried and Chas. W. Nichols constitute the Board of Directors. Mr. Siegfried is General Sales Manager.

It is exceedingly interesting to note also that almost every official has made a life's work of the wood wheel business.

H. F. HARPER, President, started as a shipping clerk with the W. K. Prudden Company, sixteen years ago. Ultimately he became President of the Prudden Wheel Company and on the organization of the Motor Wheel Corporation was made President of the larger organization.

B. S. GIER, First Vice President and Treasurer, was one of the organizers of the Gier and Dail Mfg. Company and later the organizer of the Gier Pressed Steel Company, which company he ultimately headed as President.

D. L. PORTER, Vice President, was associated with his father in the old Lansing Spoke Company, which later became the Auto Wheel Company, of which organization he was Secretary and General Manager at the time of the organization of the Motor Wheel Corporation.

W. C. BROCK, Vice President, has been with the Weis & Lesh interests more than twenty years and is an expert on hardwoods of all kinds for wheel building.

C. C. CARLTON, Secretary, after being Assistant to the President of one of the three big rubber companies, had active charge of the rim department until he became General Sales Manager of the Prudden Wheel Company.

J. B. SIEGFRIED, General Sales Manager, has gone all the way from office boy to the general managership of one of the large motor car companies, before becoming Vice President of the Auto Wheel Company.

This very brief resume is set forth solely for the purpose of establishing the fact that the destinies of the Motor Wheel Corporation and its customers lie in the hands of a coterie of men whose capacities and judgment are based upon intimate knowledge of conditions encountered.

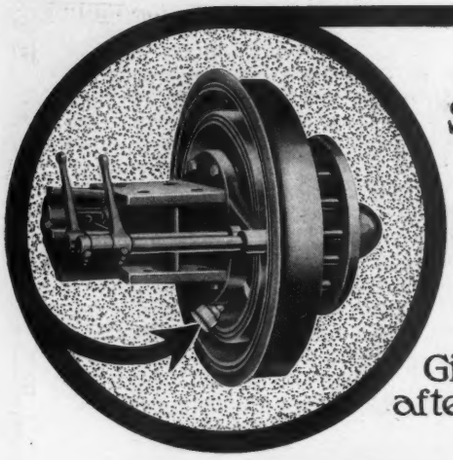
MOTOR WHEEL CORPORATION

Manufacturers of

MOTOR VEHICLE WHEELS COMPLETE

METAL STAMPINGS, STEEL PRODUCTS

LANSING, MICHIGAN



Standard Factory Equipment on WISCONSIN AXLES

Giving dependable service day after day on over 6000 Wisconsin equipped motor trucks

EMPRESS GREASE and OIL CUPS

Because of their never failing service and dependability, have for years predominated as standard equipment with the leading axle builders.

Drawn from rolled sheet metal this cup provides a light and extremely strong lubricator that withstands the racking conditions of motor truck service. The locking device secures the cap against loss even though used in places of excessive vibration. The post in the lock also prevents cross threading. A size for every requirement.

Write for Catalog F

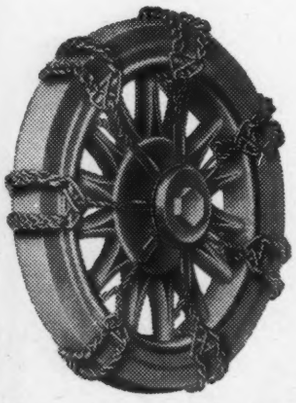
REG. U.S. PAT. OFF. Empress

BOWEN PRODUCTS CORPORATION

Manufacturing and Sales Divisions
Auburn Div., Auburn, N. Y. Winkley Div., Detroit, Mich.
Cleveland Div., Cleveland, Ohio
Minneapolis Div., Minneapolis, Minn.

Branch Sales Offices
New York, 220 Broadway. Chicago, 1607 Otis Bldg.
San Francisco, Monadnock Bldg.
Boston, 903 Dexter Bldg. Cincinnati, 409 Lyric Bldg.

DAUBENSPECK DUBL-BILT



Single Unit Non-Skid Truck Chains

These Chains *get the business* and that is one thing every dealer must think about. There is no money in having shelves loaded up with a lot of "dead ones." Our Chains get the business because they give truck owners and drivers what they want. One unit, or as many units as may be needed, can be put on *without jacking up the load.* Chains can't roll, lock or cut tires. Strong enough to hold under all conditions of road and load.

WRITE FOR OUR DEALER PROPOSITION

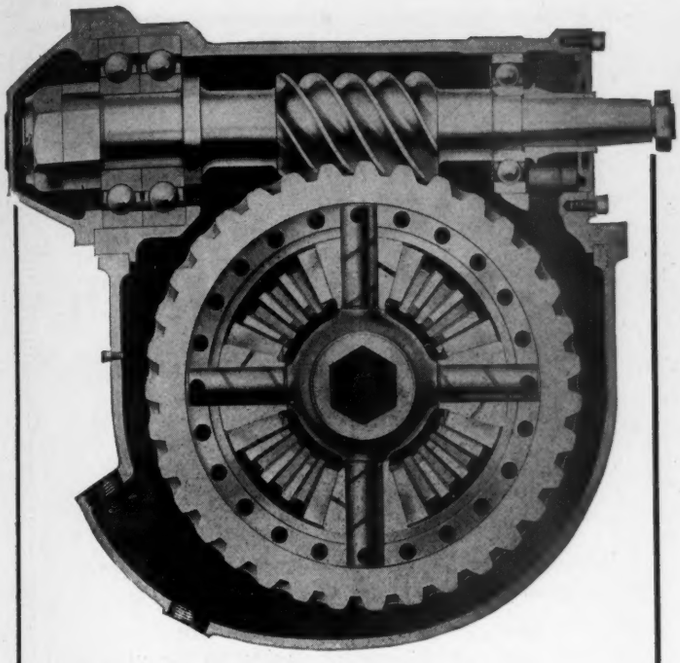
Daubenspeck Chain Co. Butler, Pa.

Minute Grabs

Minute Grabs are so called because of the speed with which they get the car out of trouble. Can be put on quickly from the running-board without getting down into the mud. Equally quick-acting in the matter of sales. Everywhere in all parts of the country car owners are enthusiastic about them and dealers are constantly re-ordering.

Every car should carry a pair for emergency use. Get our Dealer Proposition and be prepared to supply your customers.

3½ and 4 inch sizes, per pair, $3.00
4½ and 5 inch sizes, per pair, 3.25
(One for each rear wheel)



Radio-Thrust
Bearings for Worm Shafts

Thrust bearings on worm-driven truck axles, or in any other worm-gear speed reduction units, *must* stand up.

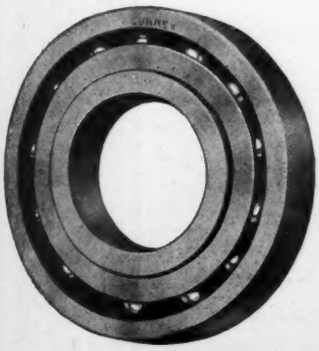
Gurney Radio-Thrust Bearings in the Worm-Driven Sheldon Truck Axle, shown herewith *do* stand up.

Note the simplicity of design—two opposed R-T bearings to carry both the radial and reversing thrust loads at one end of the worm shaft, and one radial bearing at the other end, for the radial load only. Fewer parts, easier machining, and longer life are salient features of this construction.

GURNEY BALL BEARING CO.

Conrad Patent Licensee

JAMESTOWN NEW YORK



Send for our G-2 Bulletin giving full details of all our bearings, and illustrating applications in many different classes of machinery.

GURNEY
BALL BEARINGS

(1883)

The Final Drive That Stands Up

THE use of the worm gear drive grows and grows because it is the most desirable and satisfactory form of final drive for motor trucks.

It is the most efficient—97% efficient; it is the *quietest;* it is the most *compact;* it is the *simplest* and the *easiest* to lubricate perfectly; and it is the longest lived. A good worm gear stands an enormous amount of grief without showing any signs of wear.

Therefore, when quality, service and final efficiency govern, the worm gear drive is the choice.

And, because of correct design, fine workmanship and materials, "*Cleveland High Efficiency*" Worm Gears are more and more specified and used.

Do not forget that our engineering department, specializing exclusively on worm gearing, is at your service. Write.

The Cleveland Worm Gear Co.

"America's Worm Gear Specialists"

Cleveland, Ohio, U. S. A.

C. F. Quicke & Co.
315 Euston Rd., London, N. W.

Alfred H. Coates Co.
41 Spear St., San Francisco, Cal.

Cleveland
WORM GEARS
OTHER GEARS WEAR *OUT*. THE WORM GEAR WEARS *IN*.

A Big Capacity Truck Demands a Big Capacity Cooling System

Hauling tremendous loads, in all kinds of weather, often through soft dirt roads, has thoroughly tested the capacity of this big Lange truck owned by The Reynolds Storage and Transfer Co., Wilmerding, Pa.

Particularly has its cooling system—a Modine-Spirex—been tested. Pulling heavy loads, over almost impassable roads on low speed has given the cooling system a tremendous task and never has the Modine faltered.

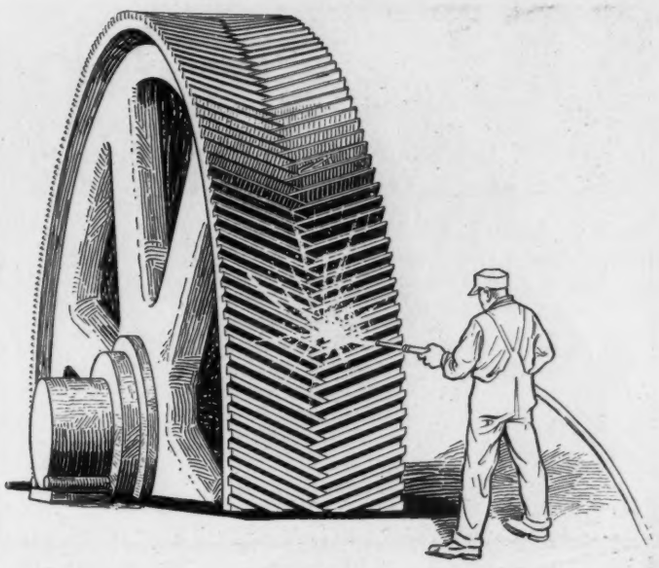
Not only in the Lange, but on thousands of trucks of other makes, the Modine-Spirex has proved its absolute dependability in keeping the hardest working truck motor properly cooled.

In the Modine-Spirex, and in no other radiator, every atom of the cooling air comes into contact with the hot water channels creating a maximum rate of heat dissipation. This whirling action is given by the patented Spirex spiral vane in each air cell. This also gives great reinforcing strength and durability.

Only in the Modine-Spirex can this construction be secured, so be sure the truck you buy is equipped with a Modine-Spirex.

Write for "The Spirex for Trucks," particularly interesting reading for truck buyer or builder.

MODINE MANUFACTURING COMPANY
Racine, Wisconsin
F. SOMERS PETERSON COMPANY, San Francisco, Cal.



Oakite Cleans 16 Times Faster Than Kerosene—

ONE MAN, with Oakite cleaning methods and materials, cleans one of these big gears thoroughly and satisfactorily in an hour.

The large reduction gears made in this turbine plant measure up to 30 feet in diameter and weigh up to *twenty tons* each.

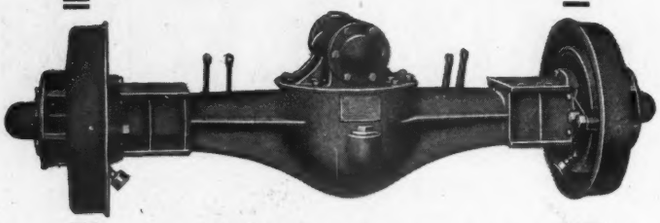
Formerly *two men* using kerosene required two whole days to remove the ground glass or silica and mineral oil left by the grinding operation on the teeth.

This Advertisement is one of a series based on actual occurrences. W. W.

Oakite materials enable one man to do as much cleaning in one hour as two men did in 16 hours. Oakite cleans 16 times faster—thereby saving much time and labor.

May We Serve YOU Too?

OAKITE
MANUFACTURED BY
OAKLEY CHEMICAL CO.
38 THAMES STREET · NEW YORK



For High-Grade Trucks *Only*

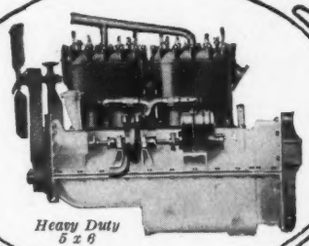
Thirty-five manufacturers of high-grade trucks are using **Wisconsin Axles**, because they are custom built for special requirements.

Manufacturers of quality trucks cannot afford to overlook the very considerable prestige **Wisconsin Axles** will add to their quality products.

1, 1½, 2, 2½, 3½ and 5 ton capacities. The most complete line of quality worm-drive rear axles made in this country.

WISCONSIN PARTS COMPANY
Oshkosh **Wisconsin**

WISCONSIN CUSTOM BUILT AXLES



Wisconsin
CONSISTENT

Fulfills All Its Promises

Wisconsin Motors leave the shops *ready to run*. They save money for the dealer by eliminating service costs and assure the owner of consistent, dependable power service.

Truck, tractor or passenger car builders specifying the Wisconsin know that the name "Wisconsin" certifies to the highest standards of engineering practice.

Each Wisconsin Motor is tested for power with an electric dynamometer—it must "deliver the goods" before our inspectors will pass it.

Slightly higher priced, of course, but in the end an economy all around.

Shall we send you the illustrated booklet "Honors Wisconsin Has Won"?

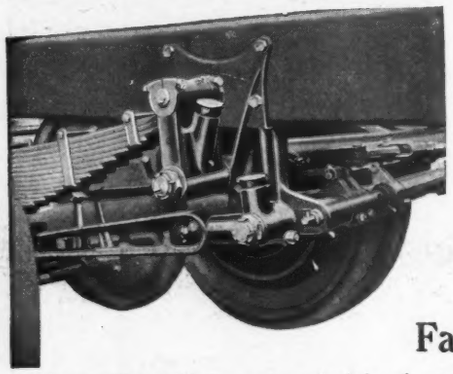
WISCONSIN MOTOR MFG. COMPANY
Station A, Dept. 320 **Milwaukee, Wisconsin**

DISTRIBUTORS:

NEW YORK BRANCH: T. M. Fenner, Factory Representative 21 Park Row, New York, N. Y.

CALIFORNIA DISTRIBUTOR: Earl P. Cooper Company, Los Angeles, Cal.

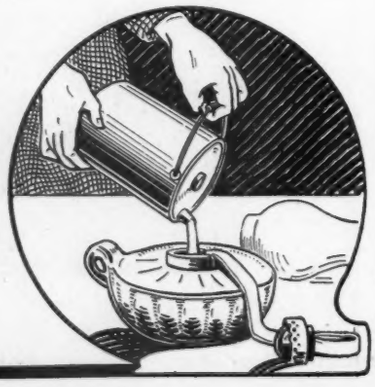
NORTHWEST DISTRIBUTOR: Chandler-Dunlap Company, Seattle, Wash.



The Old-Fashioned Wick System Fills a New-Fashioned Need

DEVELOPED from the principle of a wick in an oil lamp, the automatic lubrication of the *Ward La France Motor Truck* is the most advanced system of lubrication ever devised. The oil is supplied to the Spring Shackles, Radius Rods, the Brake Mechanism and Drag Link Assembly just as it is needed. None is wasted—it cannot cake like grease and lubrication does not flow when the truck is idle, which is a saving. It will remain lubricated without refilling longer than any other truck on the market.

This Exclusive Lubrication System is a big aid in selling. Send for full particulars about Dealerships.



Model 2B....2½ ton....$3590.00
Model 4A....3½ ton 4490.00
Model 5A....5 ton.... 5490.00

Ward La France Truck Corp.

Elmira, New York, U. S. A.
Desk 13

COTTA TRUCK TRANSMISSIONS

GEARS ALWAYS IN MESH

COTTA TRANSMISSIONS sell Cotta-equipped trucks!

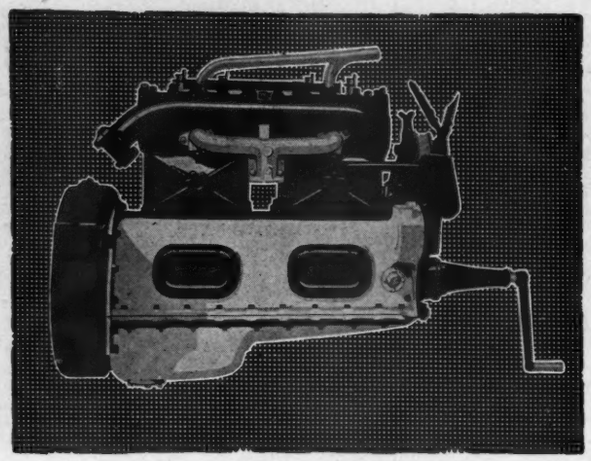
We have proved that fact to many leading truck manufacturers and their dealers. The advantages of Cotta Transmissions are so obvious and convincing that the prospect is often swayed by this one unit alone.

Let us tell you more about Cotta Transmission and the guarantee that goes with it.

Write for Our Literature

Cotta Transmission Company
Largest Exclusive Makers of Truck Transmissions
Rockford **Illinois**

An Assurance of Dependable Service



Waukesha
TRADE MARK

HIGH TORQUE MOTORS

(Maximum Pull at Usable Speed)

An ever increasing number of automotive equipment manufacturers are assuring the future of their product by specifying WAUKESHA HIGH TORQUE MOTORS as their chief unit.

WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN
The World's Largest Builders of Tractor and Truck Motors Exclusively

A Fast Seller for the Largest Truck Market

Velie Model 46 Ton-and-a-Half

For 90% of all trucking. Speedy, sturdy and dependable. First truck to bring out possibilities of pneumatics. Bodies for every service.

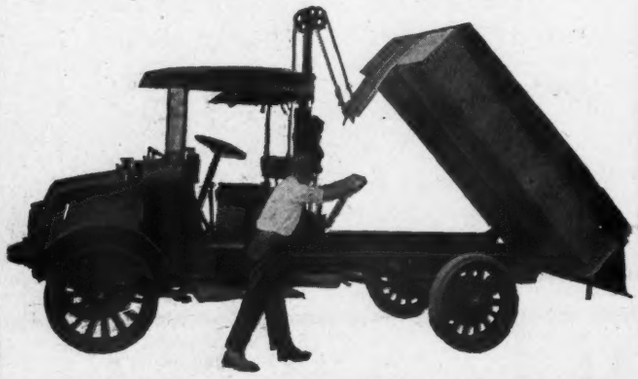
Splendid territory yet open to capable distributors and dealers.

Liberal proposition. Immediate shipment. Write or wire for particulars.

Velie Motors Corporation
119 Velie Place *Motor Truck Division* **Moline, Illinois**

Velie Trucks

Quick Sales Satisfied Customers



Archer Steel Dump Body and Hand Hoist

For contractors. For grain men and coal men. For bulk deliveries of all kinds. This equipment speeds deliveries—only 2½ minutes to dump a 5-ton load. No upkeep expense—everlasting body. Write for prices and details.

ARCHER IRON WORKS
2442 W. 34th Place **Chicago**
Makers of the Archer End-Discharging Concrete Mixer

Replacement Springs offering Bigger Profits for Dealers

for all makes of Cars

Only the finest carbon or alloy steel used. These are scientifically heat-treated and tempered in oil. Results in utmost resiliency combined with endurance. Made with or without center bolts.

15,000 Springs Always in Stock

Instant delivery, no matter what make of car. Every spring bears our long-time guarantee of satisfaction or money back quick. For faster service and bigger profits sell Maremont Springs.

Write today for our Catalogue and extraordinary offer

Maremont Mfg. Co.

916-918 S. Wabash Ave., Chicago
534-538 West 58th St. **New York**

THIS tag is the sign of the "Tenth Year Federal." It is attached to every Federal truck purchased this year and is significant of the experience and responsibility of a company that, in the past ten years, has produced more than 50,000,000 dollars worth of successful motor trucks.

FEDERAL MOTOR TRUCK CO.
DETROIT, MICHIGAN

DIETZ "CONVOY" STEEL DASH LAMP

It Burns Kerosene

DIETZ LAMPS

A SIGHTLY, dependable little Kerosene Truck Lamp of the popular Dash type. Height, 8¾ inches. 7 Candle Power.

Send for Complete Information

R. E. DIETZ COMPANY
60 Laight Street New York
Founded 1840

JAMES BARNES, Sales Manager Motor Truck Lamp Dept., Carter Building, Rochester, N. Y.

Tanks and Other Quality A.B.&B. Sheet Metal Parts

For Quality Trucks

The grinding wear of daily truck operation speedily searches out the weak spots in your truck assembly.

Your Tanks, Hoods and Fenders will always be the *strong* parts if they are made by the A. B. & B. Sheet Metal Works—

Because Our Years of Experience Have Taught Us How

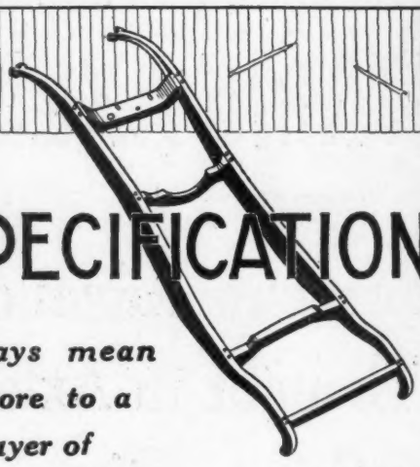
And they will retain their style and handsome appearance indefinitely.

May we show you samples of stock accompanied by our estimates? Send us your blueprints.

A. B. & B. Sheet Metal Works

CHAS. STOLPER, *President*

Fond du Lac Ave. and 33d St.
Milwaukee Wisconsin



SPECIFICATIONS

always mean more to a buyer of trucks when they include mention of

Manufacturers of
Pressed Steel Frames for Passenger Cars, Trucks and Tractors; Axle Housings; Brake Drums; Torque Arms; Running-Boards; Step Hangers; Hub Flanges; Discs; Dust Shields; Steel Barrels; Aeroplane and Miscellaneous Stampings.

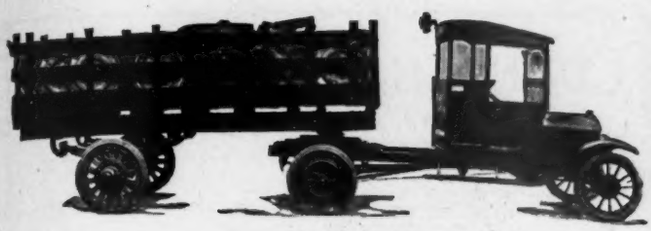
HYDRAULIC FRAMES

THE HYDRAULIC PRESSED STEEL CO.
of THE HYDRAULIC STEEL COMPANY
CLEVELAND, OHIO

Branch Sales Offices:

NEW YORK Singer Building
CHICAGO Fisher Building
DETROIT Book Building
SAN FRANCISCO Hearst Building

HYDRAULIC



King Trailers Help Sell Motor Trucks

By doubling the capacity of a motor truck, the King Trailer enables dealers to offer customers a haulage unit at greatly reduced cost.

A 5-ton King Trailer and a 2-ton truck cost only slightly more than half as much as a 5-ton truck—do the work of a 5-ton truck with an operation expense only 10 per cent greater than that of a 2-ton truck.

With an increased production, we are in position to enlarge our distributing organization. Write for our dealer proposition.

King Trailer Company

601 Main Street Ann Arbor, Mich.

King Trailers

Decrease Your Hauling Expense~

Wilson

"That's Haul"

J. C. WILSON COMPANY
Detroit Michigan

THE GUARANTEED KIND

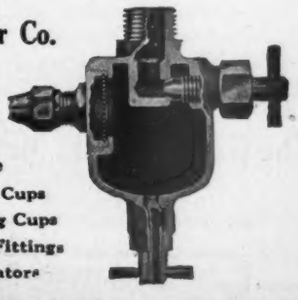
Mr. Truck Maker

Keep the dirt and water from the carburetor by using

Michigan Sediment Traps

1. Screw it into the gasoline tank.
2. The bowl traps the water.
3. The strainer gets the dirt.
4. Clean gasoline goes to the carburetor.
5. The needle valve shuts it off tight.

Michigan Lubricator Co.
Detroit, Mich.



Part of Our Line

Air Cocks	Grease Cups
Drain Cocks	Priming Cups
Gasoline Cocks	S.A.E. Fittings
Oil Cups	Lubricators

MADE BY MICHIGAN LUBRICATOR CO. DETROIT.

MICHIGAN MICHIGAN

BENDIX
ECLIPSE
for ELECTRIC STARTERS DRIVE AUTOMATIC ENGAGING & DISENGAGING

194 Motor Car and Truck Builders Use It

ECLIPSE MACHINE CO. ELMIRA N. Y.

BAKER

AUTO TRUCK SNOW PLOW

A Universal Attachment to Standard Trucks

This modern way of moving snow opens a new field for motor trucks. The Baker Snow Plow can be attached to the axle of all standard trucks. Easily raised and lowered. Protected from injury by spring hinged blades.

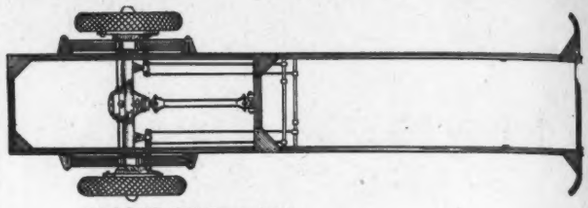
Motor truck dealers should investigate our selling plan at once. A good field is open for them.

Write for Descriptive Literature

The Baker Mfg. Co., 571 Stanford Ave., Springfield, Ill.

LUVERNE TRUCK UNITS

ONE-TON TO THREE-TON CAPACITY



Model BB Full Frame Unit

REAR END UNITS

For converting passenger cars into trucks

FRONT END UNITS

For combining with used rear-end units

BODIES, CABS, WHEELS AND MOTORS, TO FIT ANY MAKE OF TRUCK

Send for TRUCK UNIT PRICE LIST and AGENCY PROPOSITION

LUVERNE MOTOR TRUCK CO.

LUVERNE, MINN.

A Money-Maker for You

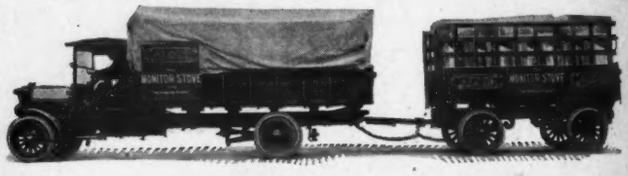
Your business automatically grows as the solid-tired trucks in your community increase —when you have an EXCELSIOR 225 Ton TIRE APPLYING PRESS No. 34.

The cost of the PRESS is quickly covered by the fast profits you make. That the profits are substantial and made quickly you can easily prove to your complete satisfaction.

Just ask us to furnish you with the names of PRESS owners; also with all other facts which will enable you to form a correct judgment of the big money-making possibilities of this proposition. *Write now.*

Excelsior Tool & Machine Co.
East St. Louis, Ill.

EXCELSIOR 225 Ton **TIRE APPLYING PRESS No. 34**



Power *for* Bad Hills *With a* Full Load *and a* Trailer!

THREE Schacht Trucks with ten-speed transmission—two of which pull Trailers—have made a remarkable record in the service of the Monitor Stove Company, of Cincinnati.

The two 3½ ton trucks are equipped with removable bodies—three bodies for two trucks. One truck leaves the extra body at the plant and it is loaded before the other comes in. An extra trailer is loaded in the same way.

The greater speed at which the Schacht Trucks with ten-speed transmission enable a load to be taken through under all sorts of conditions, and the efficient modern way in which these trucks are used have resulted in a very low cost of operation.

Write for the facts about this remarkable truck
It offers a tremendous dealer opportunity

The G. A. Schacht Motor Truck Company
CINCINNATI, OHIO
BRANCHES: NEW YORK AND CHICAGO
Export Department: 237 Hancock Street, Long Island City

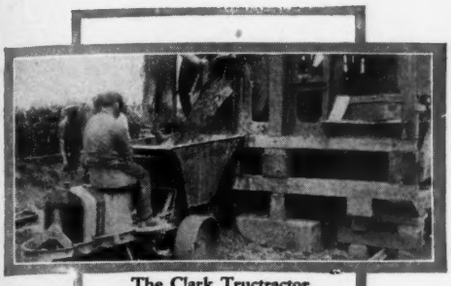
Schacht WORM DRIVE Motor Trucks

BUYERS' INDEX

This is NOT an index of what manufacturers make, but merely an index of the CONTENTS of both the reading and advertising pages of THIS PARTICULAR ISSUE, and is placed here for the benefit and convenience of our readers

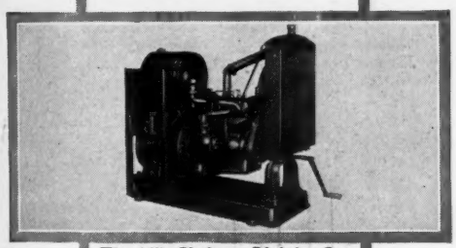
LE ROI the Little Giant of a Motor

Adopted as Standard Equipment in Twenty Distinct Lines of Business

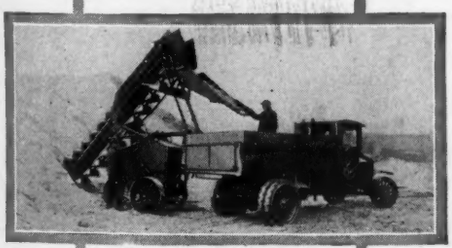


The Clark Tructractor

The Toro Tractor



The Allis-Chalmers Lighting Set



The Jeffrey Radial Loader

¶ Very few users of power-operated machinery appreciate what thought the manufacturer has given to his choice of engine. Nor do they realize what service troubles they are saved in an engine like the LE ROI. Already it has been adopted by 90% of builders of power cultivators and light tractors.

¶ You cannot go wrong in your choice if the engine is a LE ROI. It is universally accepted as the standard for such machinery.

Distributors and dealers know its operation and performance. It is built on a production scale which automatically makes for protection.

¶ 54 manufacturers of 20 distinct types of power operated machines have standardized on the LE ROI Motor. Everywhere it is recognized as the leader. Our customers would not think of offering you a substitute engine. Take any one of these uses and you will find the ***leading*** manufacturer a LE ROI user:

Light tractor, motor cultivator, ensilage harvester, street flusher, power shovel, passenger car, centrifugal pump, light motor truck, portable saw rig, concrete mixer, industrial tractor, industrial locomotive, amusement equipment, conveyor, ice-harvesting machinery, electric generator, motor boats, portable wagon loader, railway motor car, ballast screening machinery, air compressors.

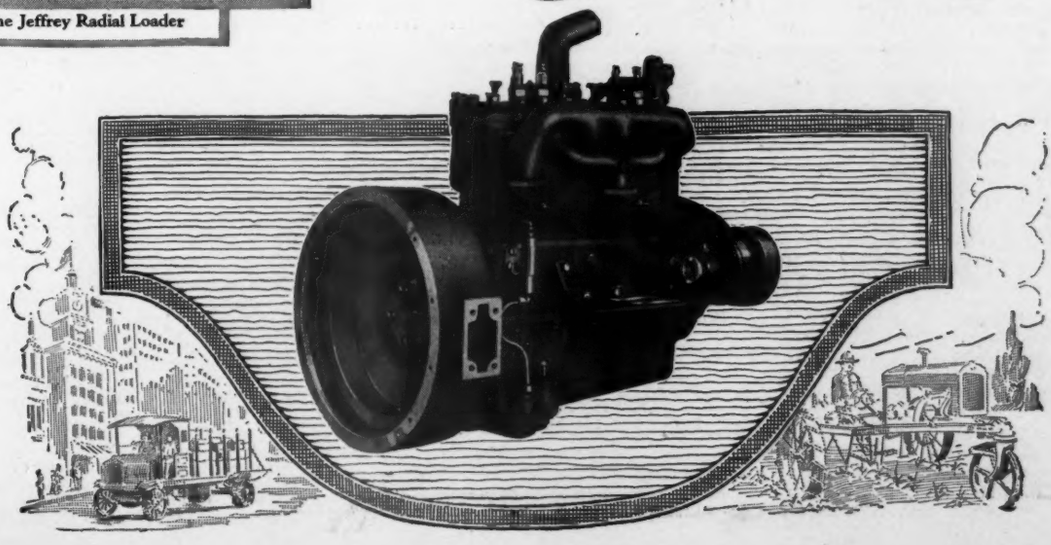
¶ In whatever machinery you buy, look first to the engine—the vital organism—and don't delay ordering. The months to come will see the greatest machinery and labor shortage that has ever faced American business.

You may have a copy of an illustrated folder in which we show some of the numerous uses to which LE ROI Engines are put on labor-saving machinery.

LE ROI COMPANY

MITCHELL ST. AND 60 TH. AVE.
MILWAUKEE, WIS.

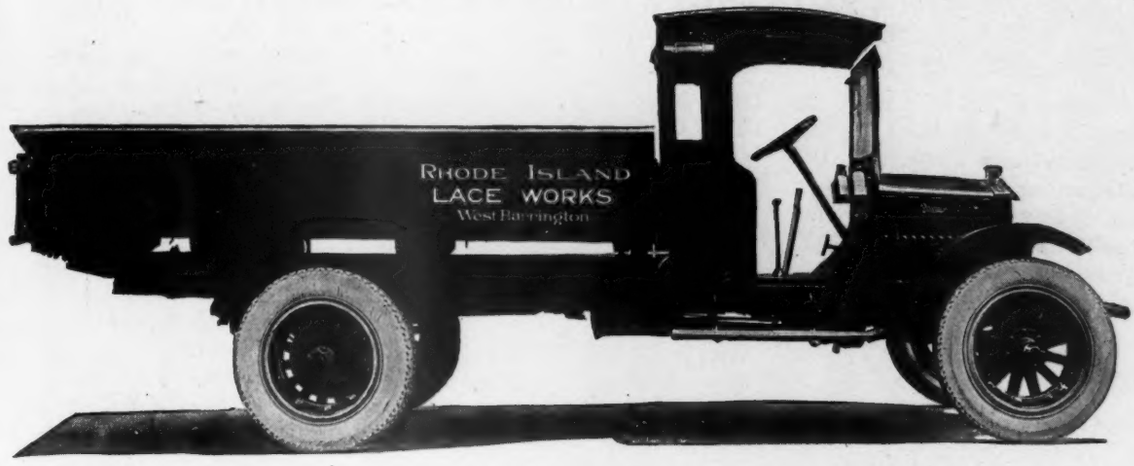
CABLE LE ROI MILWAUKEE



BUYERS' INDEX—Continued

BUYERS' INDEX—Continued

Advertisers' Index



Every Merchant is a Potential Buyer of RAINIER TRUCKS

Dominating Features of RAINIER *WORM DRIVE* TRUCKS

Continental Motor
Brown-Lipe Clutch and Transmission
Timken and Sheldon Rear Axle
Zenith Carburetor
Magneto Ignition

This is just as true in a City of 10,000 as here in New York where 1000 Rainier Worm Drive Trucks are carrying the loads of merchants in practically every line of business.

The success of Rainier Trucks in New York, and other large cities can be duplicated elsewhere. Every business man and manufacturer in your City is a potential buyer.

THE REASON

Rainier Worm Drive Trucks are made in the most popular sizes. They are most universally adapted to *Average* business needs. FURTHERMORE, they are built rugged enough to stand up under forced service, and the pressure of busy seasons.

There is a wonderful opportunity for live dealers in fertile territory for the sale of Rainier Trucks. Sale resistance is small, profits are good, a big organization is behind you. Write today for information about the Rainier dealer's proposition.

RAINIER MOTOR CORPORATION

Salesrooms, 225-227 West 58th St, New York City
Factory — Flushing, Long Island, N. Y.

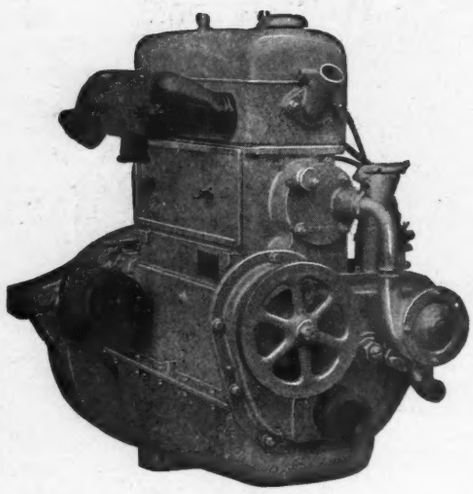
Rainier

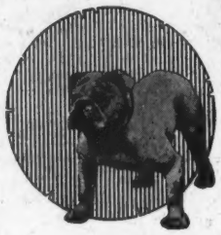
TRADE-MARK REGISTERED

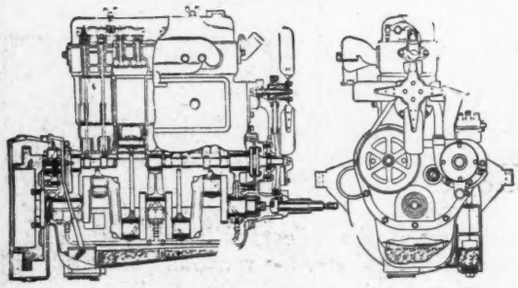
WORM DRIVE TRUCKS

Advertisers' Index—Continued

Weidely Bulldog 4-Cylinder Valve-in-Head Motors







Specifications

Bore, 3¾ in.
Stroke, 5⅝ in.
Piston Displacement, 243 cu. in.
Crankshaft Main Bearing (Rear), 2⅛ x 4 in.
Crankshaft Main Bearing (Front and Center), 2⅛ x 2⅛ in.
Connecting Rod, 2 x 2¼ in.
Wrist Pin Bearing, 1 in.
Diameter of Valves in Clear, 1 13/16 in.
Total Weight of Motor, 693 lbs.
Horse Power (S. A. E. Rating), 22.5.
Suspension, 3 point.
Bell Housing, No. 3 S. A. E.
Spread of Arms, 24½ in.
Electrical Equipment, Generator with Distributor or Magneto and Starting Motor.
Oil Pan, Cast Iron or Aluminum.
Bell Housing, Cast Iron or Aluminum.

Weidely Motors for Speed Wagons

New demands have been created by the speed wagon type motor trucks.

Rigid demands are made of the motors propelling speed wagons. They must haul truck loads at passenger car speeds economically and possess the durability of heavy-duty truck motors.

Passenger car motors have the ability to operate economically, but are not sufficiently rugged for hauling truck loads at high speeds.

Heavy-duty truck motors are not designed for operation at high speeds.

The Weidely Motor embodies the qualities of both passenger car and heavy-duty truck motors. For years we have been supplying high-speed motors built for heavy-duty service. Investigation reveals a wonderful record of performance in this field.

Weidely Motors are in large production, our plant being equipped with most modern machinery necessary for the manufacture of this particular model. Correspondence with our engineers is invited. Write for full technical description and other interesting data.

Weidely Motors Company

Main Office and Factory **Indianapolis, Ind., U. S. A.**

New York: John M. Steinau, 2 Columbus Circle
San Francisco: F. Leroy Hill, 96 Ninth St.

LOOK to the hardest users of the motor truck for worthwhile opinions of its merit. Such mens' confidence is not built by words. It is built by steady, unfailing performance, by prompt accomplishment of all possible haulage demands, by efficient employment of engine power.

Such men know the Russel Axle's part in their truck performance—know its reassuring strength, its power-saving internal gear principle, its freedom from costly repair, and its sureness in places where failure cannot be tolerated.

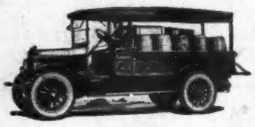
RUSSEL MOTOR AXLE COMPANY
DIVISION McCORD MFG. CO., INC.
DETROIT MICHIGAN

Russel Internal Gear Drive Axles

"Master of Road and Load"

Stewart reputation is now world-wide

¾ Ton



1 Ton

1½ Ton

Eight years of satisfactory service prove the Stewart Truck is right---designed right, built right, and priced right. For Stewart Trucks built eight years ago are still working and earning; making money for their owners; building up a reputation now world-wide. The growth of this business has been rapid. Starting with sales of $58,000 in 1912, today business men and farmers invest over a million dollars monthly in Stewarts. Quality reputation brings more orders each month, each year; Stewarts quickly prove their quality by work performed and profits earned for owners.

For Stewart Trucks are designed by experienced truck engineers, without a useless part, without a made-over passenger car part in them, without a needless pound of weight. One used on trial soon proves its worth, and around it the fleet of Stewarts is built up. Stewarts are at work today in 800 American cities, on thousands of farms, in 39 foreign countries. Factory capacity has been doubled this year and deliveries are promptly made.

STEWART MOTOR CORPORATION
BUFFALO, N. Y.

2 Ton

2½ Ton

3½ Ton

Stewart Trucks have won—By costing less to run

Stewart
MOTOR TRUCKS